A STUDY TO ASSESS THE EFFECTIVENESS OF SELF INSTRUCTIONAL MODULE (SIM) ON KNOWLEDGE AND ATTITUDE REGARDING STEM CELL AND CORD BLOOD BANKING AMONG ANTENATAL MOTHERS IN PERINTHALMANNA NURSING HOME AT MALAPPURAM.

A DISSERTATION SUBMITTED TO THE TAMILNADU DR. MGR MEDICAL UNIVERSITY, CHENNAI. IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR AWARD OF THE DEGREE OF MASTER OF SCIENCE IN NURSING.

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EXTERNAL INTERNAL

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OCTOBER 2018.

CERITIFIED THAT THIS IS THE BONAFIDE WORK OF

MRS. SHIFA KOSHY

ELLEN COLLEGE OF NURSING,
COIMBATORE, TAMILNADU.

SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT
FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING.
TO THE TAMILNADU DR. MGR MEDICAL UNIVERSITY,
CHENNAI.

COLLEGE SEAL

Prof. MRS. R. ARUL MALAR, M.Sc.(N).,M.Phil.
PRINCIPAL,
ELLEN COLLEGE OF NURSING,
COIMBATORE, TAMILNADU.

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APPROVED BY THE DISSERTATION COMMITTEE ON 12 /09/2017

RESEARCH GUIDE :.....

DR. R.ANNAPOORANI, Ph.D.,
PROFESSOR,
ELLEN COLLEGE OF NURSING,
COIMBATORE. TAMILNADU.

CLINICAL GUIDE :.....

MRS. REVATHI, M.Sc.(N),
ASSOCIATE PROFESSOR,
H.O.D, OBG DEPARTMENT,
ELLEN COLLEGE OF NURSING,
COIMBATORE, TAMILNADU.

MEDICAL EXPERT :.....

Dr. D. LALITHA KUMARI, M.B.B.S
GENERAL PHYSICAN,
KRANTHI HOSPITAL,
ADIMALI, KERALA.

A DISSERTATION SUBMITTED TO THE TAMILNADU DR. MGR MEDICAL UNIVERSITY, CHENNAI.IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR AWARD OF THE DEGREE OF MASTER OF SCISENCE IN SNURSING.

OCTOBER 2018.

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ABSTRACT

An experimental study to assess the effectiveness of self instructional module(SIM) on knowledge and attitude regarding stem cell and cord blood banking among antenatal mothers in Perinthalmanna Nursing Home at Malappuram, was conducted as partial fulfilment of the requirement for the award of the degree of Master of Science in nursing by 301521802 from Ellen College of Nursing under the Tamilnadu Dr. MGR medical University, Chennai.

The objectives of the study were,

- To determine the level of knowledge of antenatal mothers before and after self instructional module(SIM) on stem cell and cord blood banking.
- To evaluate the effectiveness of self instructional module(SIM) on stem cell and cord blood banking among antenatal mothers in selected hospital.
- To find out the association between post test level of knowledge score on stem cell banking among antenatal mothers with selected demographic variables.
- To assess the level of attitude score on stem cell banking among antenatal mothers after administration of self instructional module(SIM).

The hypothesis formulated were,

H_1: The post test level of knowledge score after self instructional module is significantly higher than the pre test level of knowledge score.

H_2: There is a significant association of post-test level of knowledge score with selected demographic variables.

H_3: There will be a significant association of post-test attitude score with selected demographic variables.

Literature review was done and organized under following headings;

1) Literature related to knowledge and attitude of antenatal mothers regarding stem cell and cord blood banking.

2) Literature related to the effectiveness of stem cell therapy.

The conceptual frame work adopted for the present study was based on the Imogene king's goal attainment model (1989). The research design selected for the study was quasi experimental one group pre-test and post-test design. The content validity of the tool was established by inter rater reliability, computed reliability coefficient r =0.88 was high.

A semi-structured knowledge questionnaire and checklist regarding stem cell and cord blood banking was prepared and used for the data collection. The data collection was preceded as follows:-

On the first day, semi-structured knowledge questionnaire and checklist were given to the antenatal mothers. After the pre test self instructional module (SIM) was handed over to the antenatal mothers. Finally, post-test were conducted on the 7th day for the same antenatal mothers using the same tools.

The main study was conducted in Perinthalmanna Nursing Home, Malappuram district. The information regarding demographic variables and stem cells and cord blood banking related factors were collected from 60 samples by random sampling method and the datas received were compiled for analysis part. The major study findings were noted as follows:-

The data was analysed using both descriptive and inferential statistics. The pre test knowledge mean score was 9.4, the post test knowledge mean score was 28.86, "t"test was also used to evaluate the effectiveness of the self instructional module(SIM) at <0.05. It was found that the "t" test value for knowledge was statistically significant at 30.51 (p 0.05). The pre test attitude mean score was 41.63, the post test attitude mean score was 53.77. Present study shows that there were significant association between the post test knowledge level of antenatal mothers with demographic variables as well as significant increase was shown in attitude score among antenatal mothers.

Conclusion

Based on findings, following conclusions were drawn. The antenatal mothers had inadequate knowledge and attitude on stem cell and cord blood banking. However, the knowledge and attitude has significantly improved after administration of self instructional module(SIM). Thus, after the study the conclusion was drawn that self instructional module(SIM) is an effective tool in enhancing the knowledge as well as attitude of antenatal mothers on stem cells and cord blood banking.

CHAPTER I

INTRODUCTION

" How beautifully everything is arranged by nature, As soon as a child enters the world, It finds a mother ready to take care of it"

" JULES MICHELET"

Mother and baby share a perfect bond from the period of conception and it is she who nurtures and gives the best of everything to her child. And with the advancement of the technologies she is not just bound to care for her baby at the present but she can now gift her baby with a gift of health, through stem cell and cord blood banking.

Stem cell and cord blood banking is a breakthrough in the medical science and it is the most advanced technology available now to repair the body's deteriorating systems. Stem cells have a potential to develop themselves into different types of cells in the body. Research and therapeutic processes use stem cells to explore the possibilities of growing new organs and tissues to replace those that are damaged or diseased.

Stem cells are derived from the cord of the placenta soon after the birth of the baby. These cord blood are rich in cells known as stem cells.. Stem cells are the cells with the remarkable potential to develop into many different cell types, during early life and growth, and they give rise to the specialized cells. In addition in many tissues they serve as a sort of internal repair system and replenish other cells as long as the person survives.

The term stem cell was first proposed by a Russian histologist Alexander maksimov in 1908 at congress of hematologic society and soon after which the first successful cord blood transplantation was reported in the year 1989 in a child with fanconi's anaemia had a dramatic developments and from then over 400,000 cord bloods are being stored worldwide for unrelated uses. Many cord blood transplants have been performed in order to cure patients with hematologic malignancies and bone marrow disorders.

Laughtin et al (2006) conducted a study in Ohio among 68 patients with leukmia or with other blood disorders. Most of the patients received transplants of umbilical cord cells

from unrelated donors. About 90% of the patient grew new healthy blood cells. Only 20% of the patients developed severe immunity problems compared to 55% of the patient who developed sub problem after receiving perfectly matched bone marrow. It is thought that because the umbilical cords are immature immunological, they adapt to the patient's body than mature bone marrow.

Stem cell and cord blood banking can be banked in two types of banks such as public cord blood bank and private cord blood bank as per the willingness of the donors. The difference between these two types of banks are, as the name suggests the public bank accept the donations from anyone and they discard the donation that fail to meet various quality control standards and use of national registers to find recipients for their sample. Private Banks accept the donations from only their donor and provide their samples to their donor, the obstacle faced by the private banks are that they are costly.

The blood can be collected by two methods they are bag and syringe method. They are bag and syringe method. The health care provider is responsible to draw the blood for processing. The cord blood drawing is a simple and painless procedure that is done soon after the birth of the baby that is within 10-15mts. After considering all the aseptic technique the health care personnel does the cord blood collection and after cleaning the cord with antiseptic solution, the health care provider draws the cord blood from placental end of the umbilical cord, normally 23-60ml of cord blood is drained from the cord and the blood is then stored in the provided bag or syringe safely.

Cord blood collection is usually performed by a trained cord blood bank personnel or delivery unit midwives or obstetricians. Before the cord blood is stored for later use, it undergoes viral testing including tests for HIV and hepatitis B,C and tissue typing to determine human leukocyte antigen type, nucleated cell type, cell viability, blood group antigen, ABO and GPRH system, molecule cluster(CD34), bacterial and fungal growth. They are then cryopressed as it is the only feasible method for long term storage of cord blood hematopoietic stem cells. A cryoprotectant is added to the cord blood to allow the cells to survive the cryogenic process. After the unit is slowly cooled to $-90^{o}C$ it can then be added to liquid nitrogen tank which will keep the cord blood unit frozen at $-196^{o}C$. The slow freezing process is an important feature to keep the cells alive during the freezing process.

Stem cells offers exciting promise for future therapies, but all this will only be possible through intensive research work in this field moreover in India stem cell made an explosive entry and the companies like life cell are widely available for this cause, but the main hindrance for stem cell banking in India is lack of awareness among the population. For the growth of stem cell banking in India the people need to be made aware of its facts and about its future benefits. They must be encouraged to contribute for this cause so that the generations ahead them are saved and are promised with a healthy life. Thus in order to make it practicable the health providers and the midwives must come forward to advocate and educate the antenatal mothers for stem cell and cord blood banking.

Need for the study

Since ages placenta was considered as a biological waste and were discarded but now after knowing it's unbelievable uses it is considered as a pure blessing for the medical science. Stem cell from umbilical cord is said to treat about 80 diseases, and have been used in more than 20,000 transplants worldwide.

In India approximately 42,434 births occurs daily, which results in discarding 42,434 umbilical cords a day. So, the storage of stem cells derived from umbilical cord can prove to be best possible insurance against life threatening diseases.

(Estimated population, January 2012)

Since the first human cord blood transplant, cord blood banks have been established worldwide for the collection and cryopreservation of cord blood. Laboratory results show that compared with human leukocyte antigen matched unrelated bone marrow transplant, cord blood have many advantages including prompt availability of the transplant and decrease of graft vs. host disease and better long term immune recovery resulting in a similar long term survival.

According to WHO since 2002, tens of thousands patients from all over the world have safely used MFII cell therapy to treat many degenerative diseases such as ALS (amyotrophic lateral sclerosis), Alzheimer's disease, cardiovascular disease, stroke, osteoarthritis, muscular degeneration, cerebral palsy etc. studies have proved that siblings have up to 75% chances of compatibility and the cord blood can also be proved to be a match for

parents and grandparents up to 50%. India's first public cord blood bank is Jeevan blood bank and research in Chennai.

A study was conducted on knowledge and attitude about stem cells and cord blood banking in turkey in 2003 among 334 pregnant women which showed that majority of its participants had lack of knowledge about stem cells and cord blood banking and needed an awareness programmed regarding stem cells and cord blood banking.

An explorative descriptive study was conducted to determine the knowledge and attitude about stem cell and cord blood banking among of 300 pregnant women in two antenatal clinics. Data were collected by interviews. The study result showed that majority of the participants lacked knowledge about stem cell and cord blood banking and wanted more information. Hence, nurses have an important role in providing knowledge thereby increasing awareness about stem cells among the people.

A study was conducted to assess the umbilical cord blood banking, public or private benefit, in Sydney. The study result shows that hematopoietic stem cell transplantation is an accepted curative therapy for many malignant and non malignant conditions affecting children and adults. Stem cells for Hematopoietic stem cell transplantation (HSCT) are provided by human leukocyte antigen matched related donors. Only 30% of patients have a suitable matched door, for other patients, donor is sought from bone marrow registries or public umbilical cord blood banks. While public umbilical cord blood banks have been supported by transplant programmes in Australia and internationally, parents have the option of storing their Childs umbilical cord blood in a private commercial umbilical cord blood bank for personal and family use. In contrast with public umbilical cord blood banks, there is little social or medical justification for private umbilical cord blood banking, as it provides no benefit to the community and little benefit to parents due to the very low like hood of requiring autologous umbilical cord blood later in life. Umbilical cord blood prove to be beneficial for tissue repair or replacement in the management of degenerative disorders such as diabetes and Parkinson's disease. The study concluded that, people storing umbilical cord blood in commercial banking for personal use. This may have a major impact on public umbilical cord blood programmes.

Based on the reviews of literature, awareness of umbilical cord blood banking is important for nurses, health professionals and antenatal mothers so the investigator felt the need

to assess the effectiveness of self instructional module (SIM) on knowledge and attitude regarding stem cell and cord blood banking among antenatal mothers.

Statement of the problem

" A study to assess the effectiveness of self instructional module (SIM) on knowledge and attitude regarding stem cell and cord blood banking among antenatal mothers in Perinthalmanna Nursing Home at Malappuram district".

Objectives of the study

- To determine the level of knowledge of antenatal mothers before and after self instructional module (SIM) on stem cell and cord blood banking.
- To evaluate the effectiveness of self instructional module (SIM) on stem cell and cord blood banking among antenatal mothers in selected hospital.
- To find out the association between post test levels of knowledge score on stem cell banking among antenatal mothers with selected demographic variables.
- To assess the level of attitude score on stem cell banking among antenatal mothers after administration of self instructional module (SIM).

Hypotheses

The following hypothesis will be tested at 0.05 level of significance:-

H_1: The post test level of knowledge score after self instructional module is significantly higher than the pre test level of knowledge score.

H_2: There is a significant association of post-test level of knowledge score with selected demographic variables.

H_3: There will be a significant association of post-test attitude score with selected demographic variables.

Operational Definitions

1. **Assess**:

   It refers to estimate a judgement about something.

2. **Effectiveness:**

   In this study, effectiveness refers to the extent to which the self instructional module has achieved the desired effect as expressed by gain in knowledge level and attitude score.

3. **Self-instructional module (SIM):**

   Self instructional module refers to a systematically developed instructional method prepared by investigator to impart knowledge regarding stem cell and cord blood banking.

4. **Knowledge**:

   It refers to an understanding of or information about a subject that one get by experience or study.

5. **Attitude**:

   It refers to a feeling or opinion about something or someone.

6. **Cord blood and Stem cell banking:**

   Cord blood and Stem cell banking refers to the safeguarding the cord blood for future treatments and therapies in a cord blood bank.

7. **Antenatal mothers**:

   Women who carry foetus in her womb are referred as antenatal mothers.

Assumption

- Antenatal mothers may have inadequate knowledge and attitude regarding stem cell and cord blood banking before self instructional module (SIM).
- Self-instructional module (SIM) may increase the knowledge and attitude of Antenatal mothers on stem cell and cord blood banking.

Delimitation

The study is delimited to:

- The study is limited to 60 samples only.
- Antenatal mothers were drawn from the same setting.
- Only knowledge and attitude was assessed.

Projected outcome

The result of this study helps the investigator to know the effectiveness of self instructional module (SIM) on stem cell and cord blood banking among antenatal mothers. Thus, this study will help the antenatal mothers to gain knowledge and attitude towards stem cell and cord blood banking.

CHAPTER - II

REVIEW OF LITERATURE

Review of literature is a key step in research process and thus helps to lay a foundation. The purpose of the study is analyzing and reviewing existing literature is to generate research questions to identify what is known and what is not known about a topic. The goal is to develop a strong knowledge base to carry out research and non research scholarly activities.

A review of literature is a compilation of resources that provides that ground work for future study. A review provides a basis for future investigation justifies the need for data collection and relates the findings from one study to another with the hope to establish a comprehensive body of scientific knowledge in a professional discipline from which valid and pertinent theories may be developed. A review of the previous work allows the researcher with what has been dine in a field, thereby minimizing the possibility of duplication.

This chapter deals with two parts:

- Review of literature related to study.
- Conceptual framework.

In this study, the literature reviewed is presented under the following heading:

1. Literature related to knowledge and attitude of antenatal mothers regarding stem cell and cord blood banking.

2. Literature related to the effectiveness of stem cell therapy.

1. Literature Related to Knowledge and Attitude of Antenatal Mothers Regarding Stem Cell and Cord Blood Banking.

Danzer et al (2003) conducted a prospective study to evaluate the attitude of mothers towards unrelated donation of umbilical cord blood for transplantation six months after giving birth in university hospital of basal. The data were collected by using questionnaire from 131 women. In this study 96.1% of the mothers stated that they would donate umbilical cord blood again and all the respondents were certain that their decision to have donated umbilical cord blood was ethical. This study shows a high degree of satisfaction of unrelated umbilical cord blood donation for banking in women six months after delivery.

Louiza et al (2014) conducted a study on knowledge about umbilical cord blood banking among Greek citizens. Study included Individuals aged between 18 and 42 years. The individuals were asked whether or not they were in favour of UCB storage of 1,019 represents the majority 74% answered positively. Since 34% of these people did not know anything about umbilical cord blood transfusion. Respondents aged between 18 and 27 years old seemed to be less informed out of 1,019 respondents 292 (28.8%) were parents of whom 81.5% knew about umbilical cord blood transfusion.

Sibel et al (2017) conducted a study on knowledge and attitude about cord blood and cord blood banking. The study was a cross sectional study with 322 mothers between ages of 18 and 49 years in health centres of turkey. It was found out that 29.8% of mothers knew about cord blood and stem cells 75.4% of mothers do not know about cord blood banks and 21.1% learned about these issues from internet and other mass media. It was also found that knowledge level of mothers increased and their attitudes got better in accordance with their educational status.

Conrad Vincent Fernandez et al (2003) conducted a study on knowledge and attitudes of pregnant women with regard to collection, testing and banking of cord blood cells. Study was conducted with 650 women's attending antenatal clinics at a regional woman's hospital. A total of 443 women (68%) responded more than half of the women 70% reported poor or very poor knowledge about cord blood banking. Many of the respondents 68% thought

that physicians should talk to pregnant women about collection of umbilical cord blood. About 89% elected public bank to store their cord blood.

Dunia Jawdat et al (2017) conducted a study on public awareness on cord blood banking in Saudi Arabia. Study had 1146 samples and they were given 22 multiple choice questionnaires. The majority were young females 19-25 years old (26%) who are college graduates (57%) with middle class socio economic status (82%). The subjective overall assessment of knowledge was inadequate (66%). Only 52% knew that the cord blood is a source of stem cells. More than half did not know about umbilical cord blood. However, most subjects accepted cord blood storages, which anticipates great impact efficacy on educational programs.

Savita et al (2015) conducted a study on knowledge of antenatal mothers regarding cord blood banking. It is an exploratory study which was conducted in Punjab where 200 antenatal mothers were selected by purposive sampling technique. Data is collected by a questionnaire revealed that majority 55% of mothers had average knowledge regarding cord blood banking 26.5% had below average knowledge mean % score was highest 45.63% in advantages and disadvantages and least in general information. Hence, it is conducted that there is a need to enhance the knowledge of antenatal mothers by means of pamphlet.

Maiyan et al (2011) conducted a study on factors that influence a mother's willingness to preserve umbilical cord blood. Surveys of 5120 Chinese mothers with average age of 26.1±8.4 years were included in the study. The results showed that first time mothers showed greater willingness to preserve their umbilical cord (73.3%) compared to those having their second (48.9%) and third child (40.3%). Mothers who were employed at government agencies and organizations were more willing to preserve their umbilical cord blood (87.3%) than those employed in factories (62.0%) and those who are unemployed (27.3%). Mothers holding masters degree were more willing to preserve then umbilical cord blood (72.5% and 71.1% respectively) than mothers with high school diplomas (48.7%) on those who only went to preliminary school or middle school (40.7%). The results showed that mothers with higher education on those having better occupation are more likely to preserve their umbilical cord blood in china.

Hassal et al. (2007) conducted a study to evaluate the attitude of women towards cord blood donation and transfusion. Data were collected from 180 women who were attending maternity clinic in Mombasa, by using questionnaire. In this study, the donation and transfusion of cord blood were acceptable to 81% and 78% of women respectively. This study concluded with a point that the donation of umbilical cord blood and its transfusion are acceptable to the majority of women.

Deeksha Pandey et al (2016) conducted a study on banking umbilical cord blood, awareness, attitude and expectations of potential donor from one of the largest potential repository. The study included 254 pregnant women only 26.5% woman in the study knew what exactly is meant by umbilical cord blood. A large proportion (55.1%) was undecided whether they want to bank umbilical cord blood or not so the study was concluded with a note that obstetricians should pay a more active role in explaining the patients regarding pros and cons of umbilical cord banking.

Dinc et al (2009) An exploratory descriptive study was conducted to determine the knowledge and attitudes about stem cells and cord blood banking among of 334 pregnant women in two antenatal clinics. Data were collected by interviews. The study result showed that majority (86.6%) of the participants lacked knowledge about stem cells and cord blood banking, and wanted more information. The study concluded that antenatal mothers had inadequate knowledge and those giving antenatal and prenatal care need to offer accurate and scientific counseling services on this subject to parents who need to be informed.

Deeksha et al. (2010) conducted a study on banking umbilical cord blood stem cells. Awareness, attitude and expectations of potential donors from one of the largest potential repository (INDIA). A total of 300 women were recruited for the study out of these 13 refused to participate 287 women filled questionnaire. Overall awareness of the general understanding of banking was poor in study population. Only 26.5% women knew exactly what is umbilical cord blood is meant 31% knew private cord blood banking. Only 18.1% of the women knew the likelihood of needing to use stored umbilical cord blood for self and family.

Stephen sik hung sken et al (2011) conducted a study in Hongkong to assess

the knowledge on commercial cord blood banking among pregnant women. 2000 women were taken, 1866 (93.3%) completed the knowledge questionnaire. The majority 78.2% had no idea that there was the chance of using self stored stem cells; only 20.3% women knew that stem cells are available from Red Cross in case their children need hematopoietic cell transplantation. The results of the study revealed inadequate knowledge on umbilical cord blood stem banking and its application.

Perlow JH et al (2006) conducted a study in phoenix to determine patient's knowledge of umbilical cord blood banking (UCBB). 425 patients were taken, 37% has no knowledge of umbilical cord blood banking, 71% of patients were not planned for umbilical cord blood banking because of expense and insufficient knowledge, 2.6% were extremely knowledgeable and same wise 75% were minimally informed and only 14% of patients were evaluated about umbilical cord blood banking by their nurse or obstetrician and 90% of patients expected their obstetrician to answer their questions. The study concluded that patients have lack of knowledge and expense remains a barrier to umbilical cord blood banking.

Surbek DV. et al (2006) conducted a study in the university of Basel women's hospital pregnancy outpatient clinic, Germany, to estimate the acceptance of cord blood donation among pregnant mother. 300 questionnaires were handed out to pregnant women of different ethnic background, 250 (83%) returned and 245 was evaluated for final analysis, only 40% indicated that they did know what usually happens to the placenta after birth, 95% stated to donate cord blood for their own child for their purpose. The study concluded the high acceptance of umbilical cord blood donation and stem cell transplantation among pregnant women's.

Gregory-katz et al (2011) conducted a study to assess the knowledge and attitude of pregnant women towards cord blood banking in 5 European countries. 79% of pregnant women had little awareness of cord blood banking, 58% of women had heard of the therapeutic benefits of cord blood, 21% received information from midwives and obstetricians, 72% choose to donate to public bank, 12% choose a mixed bank 12% choose private bank, 92% would donate their child's cord blood to research when it is not suitable for transplantation. The

study concluded that pregnant women has lack of knowledge on cord blood banking and attitude of pregnant women are not an obstacle to the rapid expansion.

Patricia Palten et al (2010) conducted a study among 300 German speaking pregnant women in Berlin to know whether a correlation between women's knowledge about stem cell banking and level of education. The data collected by using anonymous questionnaire. Among them 3 quarters of the population heard of stem cell banking, most had no further knowledge about the method. Only one third of the interviewed women were informed about whether certain diseases had been treated with stem cell banking by the time the survey was being conducted, whereas 50-60% did not know how to answer these questions.

2. Literature Related to the Effectiveness of Stem Cell Therapy

Syrjala et al (2011) a cross sectional study was conducted to assess the development and implementation of an internet based survivorship acre program for cancer survivor treated with hematopoietic stem cell transplantation. Of 1,775 participants approached for the study, 775 (58% were eligible) consented and completed baseline assessment. The result showed mean age was 51.7, and SD-12.5 age range 18-79 with 56 male, 57% required staff contact one or more times, a majority were for minor technical issues or delays incompletion of enrollment or baseline assessment. This study demonstrated the potential for providing internet based survivorship care to long-term survivors of HSCT.

Kaimal et al (2009) conducted a study to investigate the cost effectiveness of private umbilical cord blood banking. The method used was decision analysis model. The study reveals that private cord blood banking is not cost effective because it causes an additional amount. In sensitivity analysis it reveals that if the cost of blood banking is less than $262, private cord blood banking becomes cost effective only for children with a very likelihood of needing a stem cell transplant.

Janssens et al (2006) a randomized controlled trail study was done to assess the effectiveness of antilogous bone marrow derived stem cell transfer in patient with myocardial infarction. A convenient sampling of 67 patients was done from whom we harvested bone

marrow for one day after successful percutaneous coronary intervention. The results showed that 46.9% (SD-8.2) had control and 38.5% (SD7.2) are increased stem cell production after 4 months intervention. The study demonstrated that the treatment was effective on myocardial infarction patient of 1.036 (95%) at p=0.36.

Tang Her et al (2010) a study conducted on "transplantation of unrelated donor umbilical cord blood for Non malignant diseases" in Taiwan among 45 patients with median age of 4.5 years between October 2003 and February 2009 and evaluated on may 2009.Incidences of graft versus host disease 42%, 5 years overall survival 88% and disease free survival 77.1%. Incidence of treatment related mortality at 2 years 12% and identified that unrelated cord blood transplantation is a promising approach for curative therapy of non-malignant disease.

Lopez m et al (2009) conducted a prospective study to analyze the umbilical cord blood characteristics of umbilical cord blood units from preterm deliveries and compare them to full term deliveries. A comparative study was conducted between preterm deliveries and full term deliveries. The sample size was 194 patients. The study concluded that umbilical cord from preterm deliveries contain higher CD34 cell content than umbilical cord blood units from full term deliveries.

Hassal et al. (2007) conducted a study to evaluate the attitude of women towards cord blood donation and transfusion. Data were collected from 180 women who attended the maternity clinic in Mombasa, BY using questionnaire. In this study the donation and transfusion of cord blood were acceptable to 81% and 78% of women, respectively. This study concluded that the donation of umbilical cord blood and its transfusion are acceptable to the majority of women.

Peffault et al (2013) conducted for patients with inherited Body Mass failure and who lack a suitable alternative donor the prognosis remains poor. The study confirmed the feasibility of this treatment and highlighted the fundamental role of the TNC dose (>3.9 into 10.7/kg) on both engraftment and os using cord blood as stem cells source in severe aplastic anemia.

Aufderhaar et al (2013) conducted a study to determine whether intra partum factors have an influence on the hematopoietic cell compartment of cord blood. Cord blood samples were obtained from 102 normal full term deliveries for the banking of stem cells. The method used was analytical method. This study concluded that some intra partum factors such as higher birth weight, larger blood volume, lower arterial ph, have an impact on the characteristics of collected cord blood cells. This knowledge may facilitate the selection of optimal cord blood samples for unrelated banking and early discarding of suboptimal cord blood samples thus resulting in saving of costs.

Poliana et al (2011) conducted a study on stem cell transplantation for Hodgkin's disease. The study selected 13 patients with Hodgkin's disease and was treated. All patients received high dose chemotherapy followed by donor mobilized peripheral blood stem cells collection. Results showed that combined therapy was well tolerated; about 10 patients had 100% cures. The researcher concluded that high dose chemotherapy followed by autologus PBSC transplantation results in long term disease free survival of 30%-60% of selected parents.

Stem cell banking is a blessing of healing to our generation. The only thing we need to look upon is to make its usefulness aware among the mothers and to give them an assurance of better and healthy generations ahead. Today there are many misconceptions, ignorance and inadequate knowledge on umbilical cord stem cells which are prevalent among the mothers which can be kept at a bay only with adequate knowledge.

➢ Conceptual framework

Conceptual framework is a theoretical approach to the study of problems that are significantly based and emphasizes the selection, arrangement and classification of concepts. Conceptual framework refers to interrelated concepts or abstractions that are resembled together in some rational scheme by virtue of their relevance to a common theme.

They serve as a spring board for the generation of hypothesis to be tested. The utility of the conceptual frame models come from the organization of the elements used for the study. It gives a direction to research for relevant questions on the phenomena and points out a solution to practical problems.

Conceptual framework refers to interrelated concepts or abstractions that are assembled together in some rational scheme by virtue of their relevance to a common theme.

(Polit and Hunger: 1997)

The present study aims at evaluating the effectiveness of self instructional module (SIM) on stem cell and cord blood banking among antenatal mothers to enhance their knowledge and attitude. The conceptual framework of the present study is developed by the investigator based on Imogene king's goal attainment model (1989).

This model focuses on interpersonal relationship between the investigator and the antenatal mothers in which the interaction takes place between the investigator and the antenatal mothers, and upon perception of learning needs of both the instructor and the mothers this interaction leads to mutual goal settings that are to be achieved by the antenatal mothers in the present study the interaction takes place between the investigator and the antenatal mothers.

Perception

Perception is a process in which data obtained through the senses and memory is organized, interpreted and transformed and are related to vast experience, concepts of self and educational background. In the present study the investigator and the antenatal mothers perceive the need to gain knowledge and attitude on stem cell and cord blood banking, both the investigator and the antenatal mothers set the goal to improve their knowledge and attitude on stem cell and cord blood banking which helps them in imparting knowledge and attitude about stem cell and cord blood banking in the public.

Action

During the action phase the investigator prepares the structured knowledge questionnaire to assess the knowledge and attitude of the antenatal mothers on stem cell and cord blood banking and self instructional module (SIM) on the same.

Interaction

It is the process of perception and communication between the person and environment, represented by verbal and non verbal behavioural that are goal directed. During the interaction the investigator administers a structured knowledge questionnaire, and Self instructional module (SIM) on stem cell and cord blood banking. The antenatal mothers respond to the structured knowledge questionnaire and participate in the self instructional module (SIM). As a result of this learning program, the antenatal mothers and the investigator enter into the transaction phase.

Transaction

It is the observable behaviour of human being interacting with their environment when transaction occurs between the investigator and the client goals are attained. In the present study, the antenatal mothers gain knowledge and attitude on stem cell and cord blood banking and will consider stem cell and cord blood banking in their future.

Scope of the study

The aim of the study is to evaluate self instructional module (SIM) regarding stem cell and cord blood banking among antenatal mothers in Perinthalmanna nursing home at Malappuram. The findings of the study help to open avenues for further studies in the particular field where literature and research is lacking. The prepared learning module can act as a guide to the antenatal mothers.

This chapter has dealt with the objectives, operational definitions, hypothesis, assumptions, conceptual framework, delimitations and scope of the study. The next chapter deals with the relevant literature on the topic of effectiveness of self instructional module (SIM) on stem cell and cord blood banking among antenatal mothers.

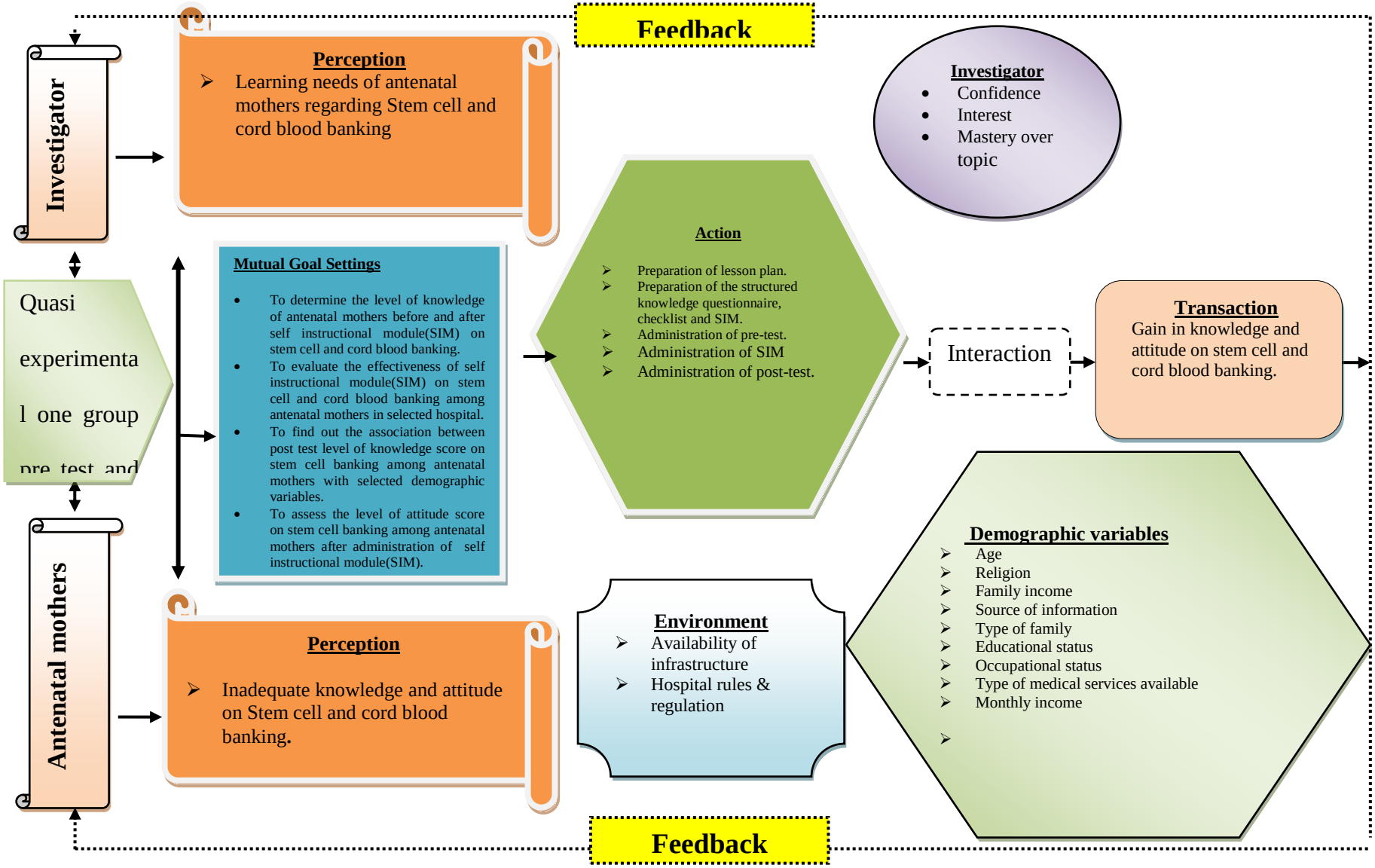

Fig 2.1 Conceptual Framework on Effectiveness of SIM On Stem Cell and cord blood banking Among Antenatal Mothers Based on Imogene King's Goal Attainment Model

CHAPTER – III

METHODOLOGY

Research methodology refers to the systematic way of solving a research problem. It indicates the general pattern for organizing the procedure for imperial study together with the method for obtaining valid and variable data for problem under investigation.

This chapter deals with the methodology selected by the investigator to study "effectiveness of self instructional module (SIM) on knowledge and attitude regarding stem cell and cord blood banking among antenatal mothers in Perinthalmanna Nursing Home at Malappuram district.

Research Approach

Research approach is the most significant part for conducting the study. An evaluative research approach is used in this study to evaluate the effectiveness of self instructional module (SIM) on stem cell and cord blood banking among antenatal mothers in Perinthalmanna Nursing Home at Malappuram district.

Research Design

Research design is an investigators overall plan for obtaining answer to the research questions or for testing the research hypothesis. The research design selected for the study is a quasi-experimental design with one group pre-test and post-test design is adopted for this study. The pre-test ($\mathbf{o_1}$) is carried out to determine the level of knowledge and attitude of antenatal mothers on stem cell and cord blood banking followed by the administration of the self instructional module (SIM). Post-test (o_2) is conducted on the 7^{th} day following the pre-test and self instructional module (SIM).

Research Notation

O_1 – Pre test assessment

X – Self instructional module (SIM)

O_2 –Post test assessment

Settings of the Study

The setting is where the population or the portion of that study is being studied, is located and where study is carried out. The setting of the study is Perinthalmanna Nursing Home, Malappuram. This hospital is selected as per the convenience of the investigator. Formal permissions would be obtained from the concerned authorities for conducting the study.

Variables

Variables are defined as an attribute of a person or objects that vary, it focuses on the study that takes on different values and reflects imperial aspects of the concepts being studied. Three types of variables are identified in this study,

1. Independent Variable

The variable that is believed to influence the dependent variable is termed as independent variable. It is the intervention the investigators perform to see the resulting modifications in the dependent variable. The independent variable in this study is self instructional module (SIM) on stem cell and cord blood banking.

Sample	Preparation of Structured Knowledge Questionnaire, checklist and SIM	Pre-Test (O_1) Day 1	Administration of SIM (X)	Post-Test (O_2) Day 7	Data Analysis
Antenatal mothers	• Preparation of lesson plan • Discussion with experts. • Preparation of structured knowledge questionnaire. • Preparation of checklist • Preparation of SIM • Content validity. • Pre-testing. • Reliability of the tool. • Pilot study.	Determine the level of knowledge and of the Antenatal mothers on stem cell banking by using structured knowledge questionnaire and attitude through checklist.	Administration of the SIM on the same day.	Determine the post-test knowledge and attitude of the Antenatal mothers by using the same tool.	Data will be analysed using descriptive (mean, standard deviation) and inferential statistics (paired "t" test, chi-square test) and the data will be presented in the form of table, graphs and diagrams. The entire hypothesis will be tested at 0.05 level of significance.

Fig:-3.1- Schematic Representation of the Study Design.

2. Dependent Variable

Dependent variable is the outcome variable. The variable that is presumed causes for the resulting changes in dependent variable. In this study it refers to the knowledge and attitude of the antenatal mothers on stem cell and cord blood banking.

3. Extraneous Variable

Extraneous variable is any uncontrolled variable that greatly influences the result of the study. In this study extra extraneous variables are the demographic characteristics, which improved age, type of family, educational status, occupational status, religion, type of medical services available, family income, and source of information.

Population

The term population refers to the aggregate or total, subjects or members that confirm to a set of specification that a researcher is interested in studying. The population for the study are antenatal mothers attending Perinthalmanna Nursing Home, Malappuram district.

Target Population

It refers to the people to which researcher wants to generalize the research finding. In the present study the target population is antenatal mothers.

Accessible Population

The part of the target population that is available to the investigator. In the present study the accessible population are the antenatal mothers who are attending Perinthalmanna Nursing Home, Malappuram district.

Sample

Sample refers to the subset of a population selected to participate in a research study. In this study sample size is 60 antenatal mothers in Perinthalmanna Nursing Home, Malappuram district.

Sampling Technique

In the present study, simple random sampling technique is used to select 60 antenatal mothers in Perinthalmanna Nursing Home, Malappuram district.

Sampling Criteria

Inclusion criteria: The study includes:

- Antenatal mothers who are in last trimester (above 28 weeks) in Perinthalmanna Nursing Home, Malappuram district.
- Antenatal mothers who are willing to participate in the study.

Exclusion criteria: The study excludes:

- Antenatal mothers who are medical and paramedical staff.
- Antenatal mothers who are below 28 weeks of pregnancy.

Description of the Tool

The tool consists of two parts:

PART: 1- Demographic variables

The first part of the tool consists of 08 items. The items are used for obtaining information of adults about the selected variables such as age, type of family, educational status, occupational status, religion, type of medical services available, family income, and source of information.

PART: 2- Preparation of the first draft of the semi-structured level of knowledge questionnaire.

The first draft of the semi-structured level of knowledge questionnaire is prepared on the basis of, extensive review of literature and discussion with the guide. The developed semi-structured level of knowledge questionnaire was given to experts to establish content validity and was asked to give their opinions and suggestions about the content of semi-structured level of knowledge. The structured level of knowledge questionnaire contains of 30 items and each statement was given a score of 1 and 0, for score of '1' was given for correct response and score '0' was given for wrong response according to their level of knowledge**.**

Scoring Key

This section sought information to assess the level of knowledge of antenatal mothers regarding stem cell and cord blood banking. For the purpose of the study the score was classified as follows.

KNOWLEDGE LEVEL	RANGE
Inadequate knowledge	:0-50%
Moderately adequate knowledge	: 51-74%
Adequate knowledge	:75-100%

PART 3- Preparation of observational checklist to assess the attitude of antenatal mothers regarding stem cell banking.

There were totally 23 items and each statement was given a score of 1 and 0, for yes and no respectively. These statements are not right or wrong answers but the respondent has to answer according to their attitude.

Scoring Key

This section sought information to assess the level of attitude of antenatal mothers regarding stem cell and cord blood banking. For the purpose of the study the score was classified as follows.

ATTITUDE	SCORE
Unfavourable (poor) attitude	: 0-50%
Moderate attitude	: 51-74%
Favourable attitude (Good)	: 75-100%

Development of Self Instructional Module (SIM)

Self instructional module (SIM) was developed in order to impart knowledge and attitude about stem cell and cord blood banking and its importance**,** discussion with the guide was made in order to develop and to correct self instructional module (SIM).

Content Validity

Content validity refers to the degree to which an instrument measures what it is supposed to do. The prepared instrument along with the objectives, blue

print, operational definitions, hypothesis, criteria checklist and is submitted to the experts in the field of obstetrics and gynaecology. A few suggestions were given to modify and simplify the wordings of some item. The modifications were made in tool accordingly.

Pre-Testing of the Tool

Pre-testing is the trial administration of a newly developed instrument to identify flaws and assess time requirement. Pre- testing of the tool is carried out in one of the selected hospital. Antenatal mothers who fulfilled inclusion criteria were selected and were administered questionnaire and checklist. Self instructional module (SIM) was administered to the clients. The clients found the language simple and understandable.

Reliability of the Tool

Reliability of the tool is defined as the degree of consistency to which the instruments yield the attribute which it is designed to measure. Modifications of the tool were made as per the need of the study. It is then checked for consistency, accuracy, stability, and homogeneity. The split half method was used for determining the reliability of the tool. The reliability co-efficient r=0.88 which was highly positive, hence the tool was reliable.

Pilot Study

A pilot study is a small scale study or trial run for the main study to test the practicability, appropriateness and feasibility of both study and tool. For pilot study the investigator selected 6 antenatal mothers in Perinthalmanna Nursing Home, Malappuram district. Permission for pilot study was obtained for one week. The six samples for the pilot study were chosen who met the inclusion criteria. The purpose of the study was explained and the confidentiality of their response was assured to the antenatal mothers. On the first day the pre-test was conducted using semi-structured knowledge and attitude questionnaire after which the self instructional module (SIM)

was administered. The tool and the self instructional module (SIM) were found feasible, practicable and acceptable. No modifications were further asked to be made in the self instructional module (SIM). Post-test was conducted after seven days using the same questionnaire to assess the level of knowledge and attitude gained by the antenatal mothers through self instructional module (SIM). Since, the adequacy of the tool was established through the pilot study the final study was conducted without any change in the tool.

Data Collection Process

A formal written permission for the main study was obtained by the investigator from the concerned authorities before the data collection. The period of data collection was of one month 10/06/18 to 12/07/18. The investigator selected the sample who met the inclusion criteria. The purpose of the study was explained in detail to the selected antenatal mothers and was assured confidentiality of their responses. The semi-structured knowledge and attitude questionnaire consisted of 38 questions regarding demographic variables (08) and knowledge and attitude on cord blood banking (30) was administered to assess the knowledge and attitude of the antenatal mothers on stem cell and cord blood banking. The mothers were asked to answer the questions by choosing the correct answer and for this 30 minutes were allotted for them. Then the self instructional module (SIM) regarding stem cell and cord blood banking was administered to the mothers. After seven days post test was conducted among the same mothers using same questionnaire and checklist. Then the data collected was compiled for analysis.

Plan for Data Analysis

Pilot (1995) states that data analysis is a systemic organization of the research data and testing of research hypothesis using data. The data analysis involved the translation of information collected during the course of research project into an interpretable and managerial form. It involved the use of statistical procedures to give

an organization and meaning to the data. Descriptive and inferential statistics used for data analysis.

Descriptive Statistics

1. The demographic data of the sample will be presented using frequency, tables and graphs.
2. The level of knowledge and attitude level regarding stem cell and cord blood banking would be presented by using descriptive statistics mean, median, rate, standard deviation in pre-test and post-test.

Inferential Statistics

1. The pre-test and post-test score would be compared using paired T-test.
2. The association of level of knowledge score with demographic variables would be tested by chi-square test.
3. The level of knowledge and attitude of antenatal mothers before and after the administration of the self instructional module (SIM) will be calculated by using frequency, mean, median percentage, standard deviation, cumulative percentage.

Ethical Consideration

The research proposal was approved by dissertation committee prior to pilot study and main study. Permission was obtained from the head of the department of obstetrics and gynaecology in Ellen College of Nursing**.** Formal permission was obtained from the setting before conducting the study. Informed consent was obtained from the antenatal mothers before conducting the study. There were no ethical issues raised during the course of the study.

Summary

This chapter has dealt with research approach, design, variables, and settings of the study, population, sampling and sampling technique. It included preparation of tools and steps following the preparation of self instructional module (SIM). This chapter also dealt with pre-testing, reliability, pilot study, data collection and plan for data analysis.

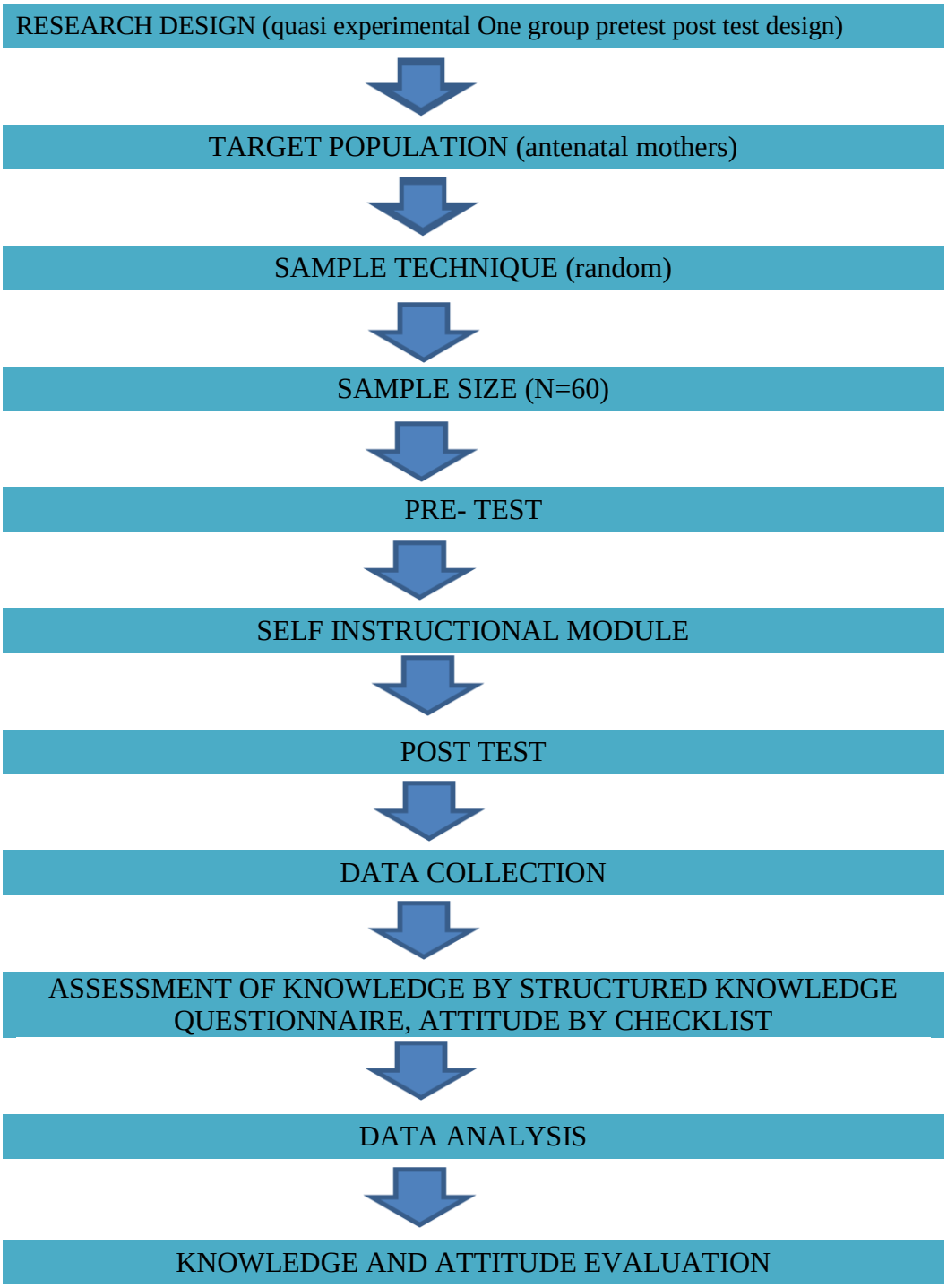

Fig. 3.2 Schematic representation of research methodology

CHAPTER – IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of data collected from 60 antenatal mothers to assess the "effectiveness of self instructional module on knowledge and attitude regarding stem cell and cord blood banking in Perinthalmanna Nursing Home. The purpose of analysis is to reduce the data into an interpretable and meaningful form so that the results can compared and significance can be identified. Kerlinger (1976) has defined analysis as categorizing, ordering, manipulating and summarizing of data to obtain answers to research hypothesis questions.

The data analysis contains three major sections. The first is frequencies and percentages analysis which will be used to describe socio demographic characters of the samples, antenatal mothers. The second section includes the descriptive analysis which describes the knowledge and attitude regarding stem cell banking before and after administration of self-instructional module (SIM) and the effectiveness of self-instructional module (SIM). Finally, in the third section the chi-square analysis were run to examine the association of knowledge and attitude of antenatal mothers with demographic characters of the sample.

PRESENTATION OF DATA AND ANALYSIS

Organization of study findings

The data collected were edited, tabulated, analyzed, interpreted and findings obtained were presented in the form of tables and figures which is represented under following sections.

Section: 1

Data on demographic variables of antenatal mothers regarding stem cell and cord blood banking.

Section: 2

Data on comparing the pre-test and post-test level of knowledge score after self-instructional module (SIM) on stem cell and cord blood banking among antenatal mothers.

Section: 3

Data on comparing the pre-test and post-test level of attitude score after self-instructional module (SIM) on stem cell and cord blood banking among antenatal mothers.

Section: 4

Data to assess the effectiveness of self-instructional module (SIM) among antenatal mothers on knowledge regarding stem cell and cord blood banking.

Section: 5

Data on association between post-test level of knowledge score and attitude score with their selected demographic variables among antenatal mothers**.**

SECTION 1

DATA ON DEMOGRAPHIC VARIABLES OF ANTENATAL MOTHERS REGARDING STEM CELL AND CORD BLOOD BANKING.

Frequency and percentage distribution based on demographic variables such as age, type of family, educational status, occupational status, religion, type of medical services available, family income, and source of information.

Table: 4.1. Frequency and percentage of the sample characteristics

S.No	Demographic Variables	Frequency	%
1	Age		
	a. 20--25years	17	28.33
	b. 26--30 years	25	41.67
	c. 31--35years	10	16.67
	d. 36 years and above	8	13.33
2	Type of family		
	a. Nuclear	12	20.00
	b. Joint	48	80.00
3	Educational status		
	a. Diploma	20	33.33
	b. Graduate	23	38.33
	c. Post graduate	12	20.00
	d. Illiterate	5	8.33
4	Occupational status		
	a .Employed/ fulltime	17	28.33
	b. Employed/part-time	31	51.67
	c. Unemployed	12	20.00
	d. own business	0	0
5	Religion		
	a. Christian	49	81.67
	b. Hindu	9	15.00
	c. Muslim	1	1.67
	d. Others	1	1.67

6	Type of medical services available		
	a. Private	42	70.00
	b. General	12	20.00
	c. Government	4	6.67
	d. PHC	2	3.33
7	Monthly income		
	a. <5000	0	0
	b. 5001-10000	10	16.67
	c. 10001-15000	42	70
	d. 15001 and above	8	13.33
8	Source of information		
	a. Health professional	23	38.33
	b. Family/friends and media	37	61.67

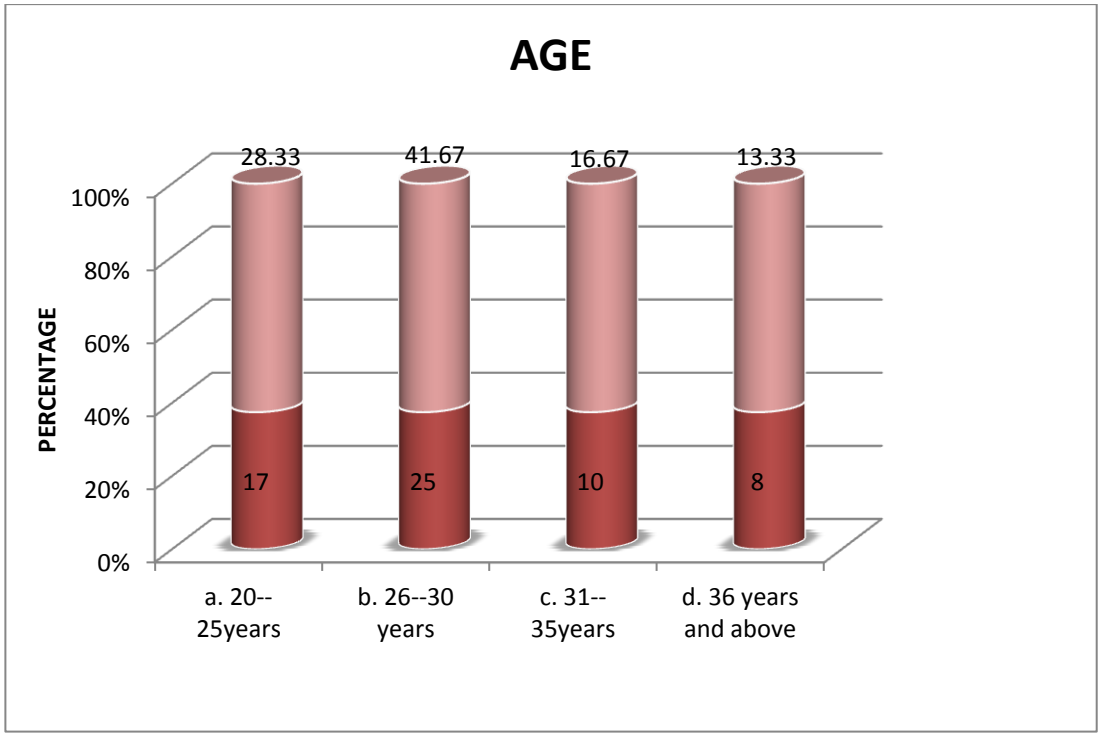

Figure-4.1: Distribution according to age of the antenatal mothers.

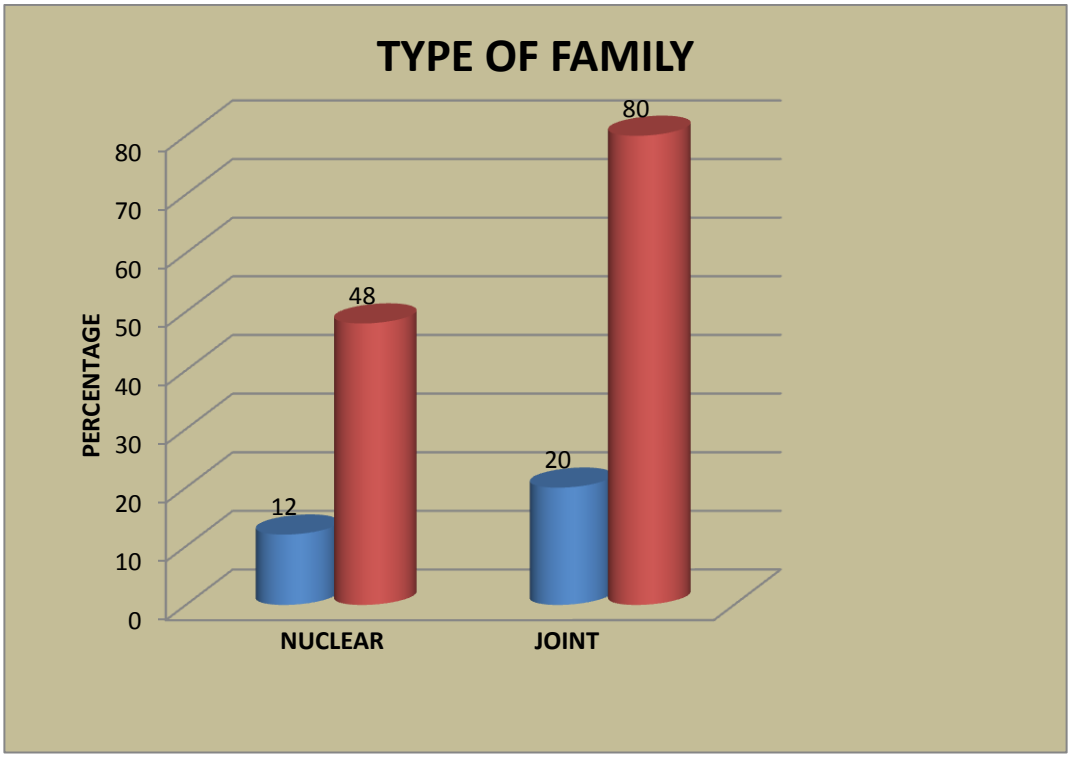

Figure-4.2: Distribution of antenatal mothers according to type of family.

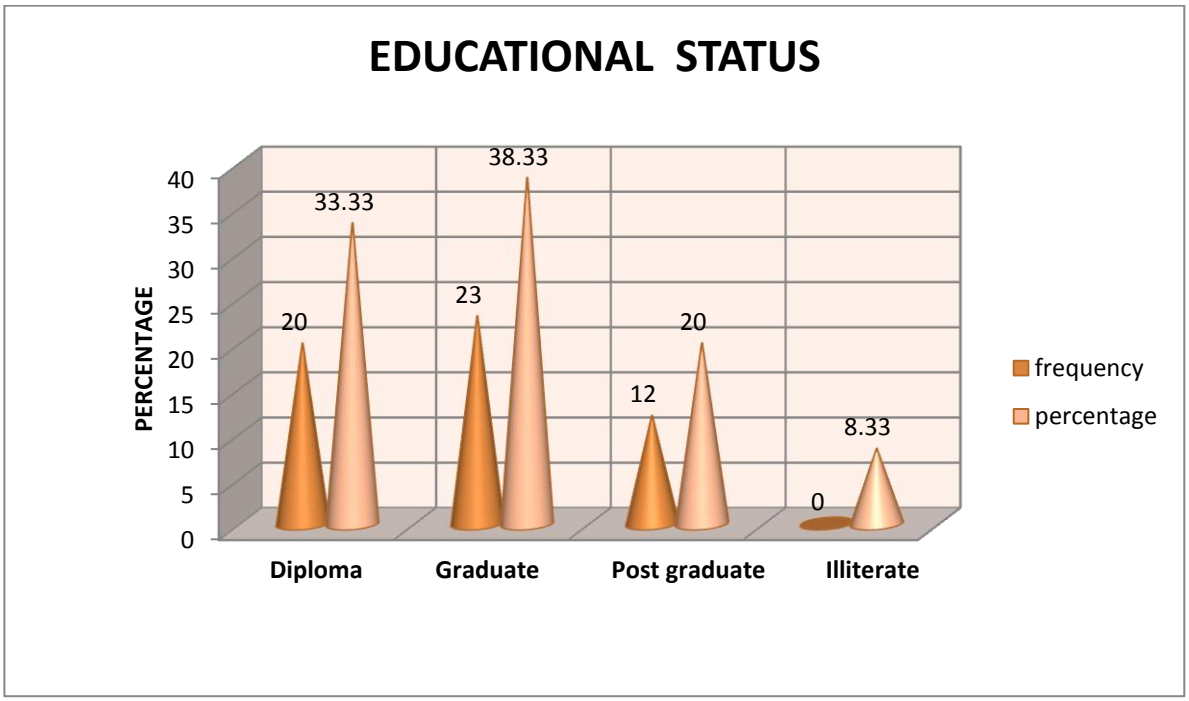

Figure-4.3: Distribution of antenatal mothers according to education

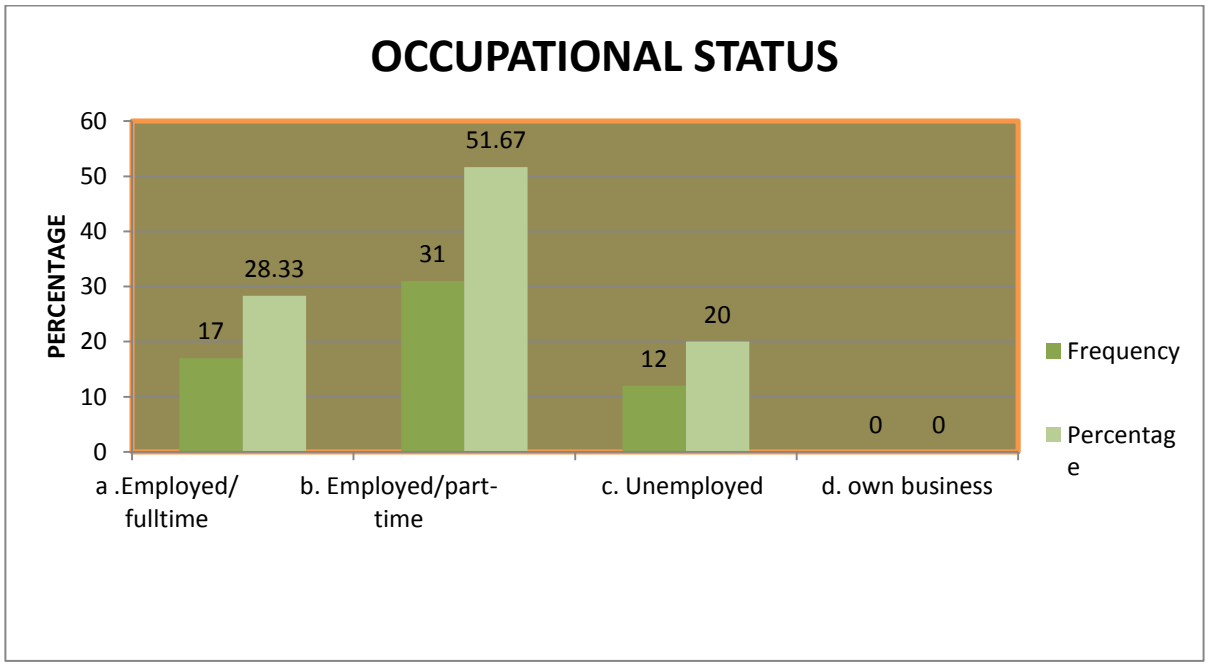

Figure-4.4: Distribution of antenatal mothers according to occupation.

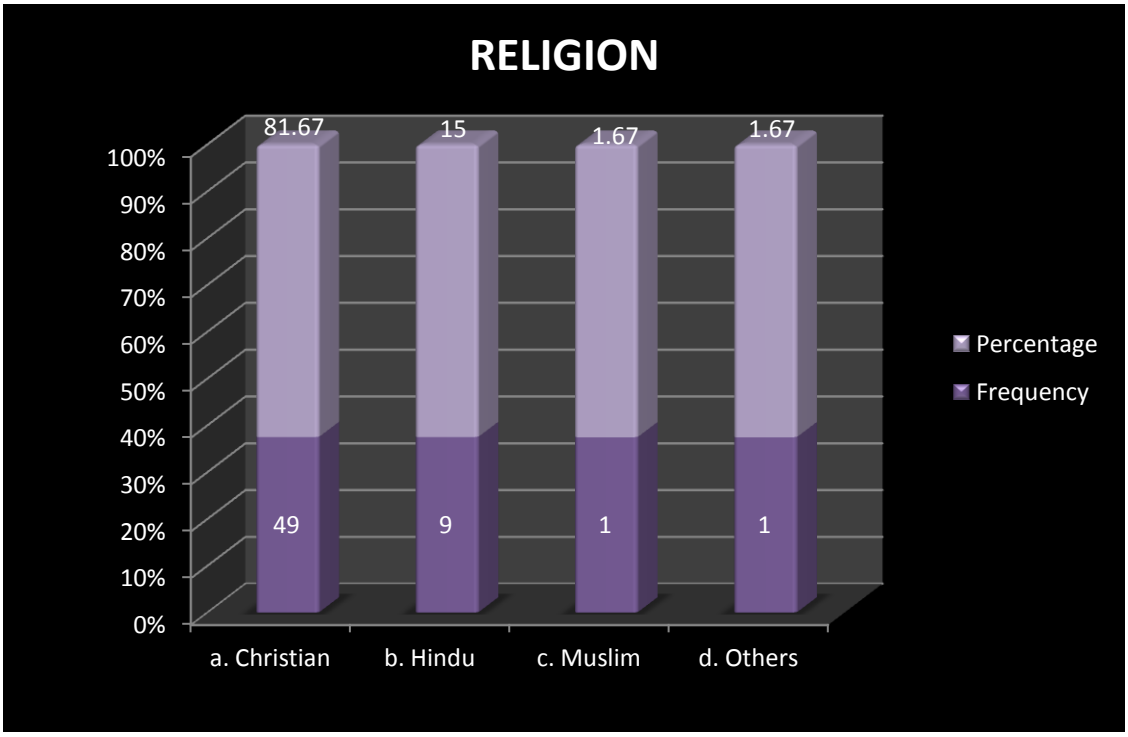

Figure-4.5: Distribution of antenatal mothers according to the religion

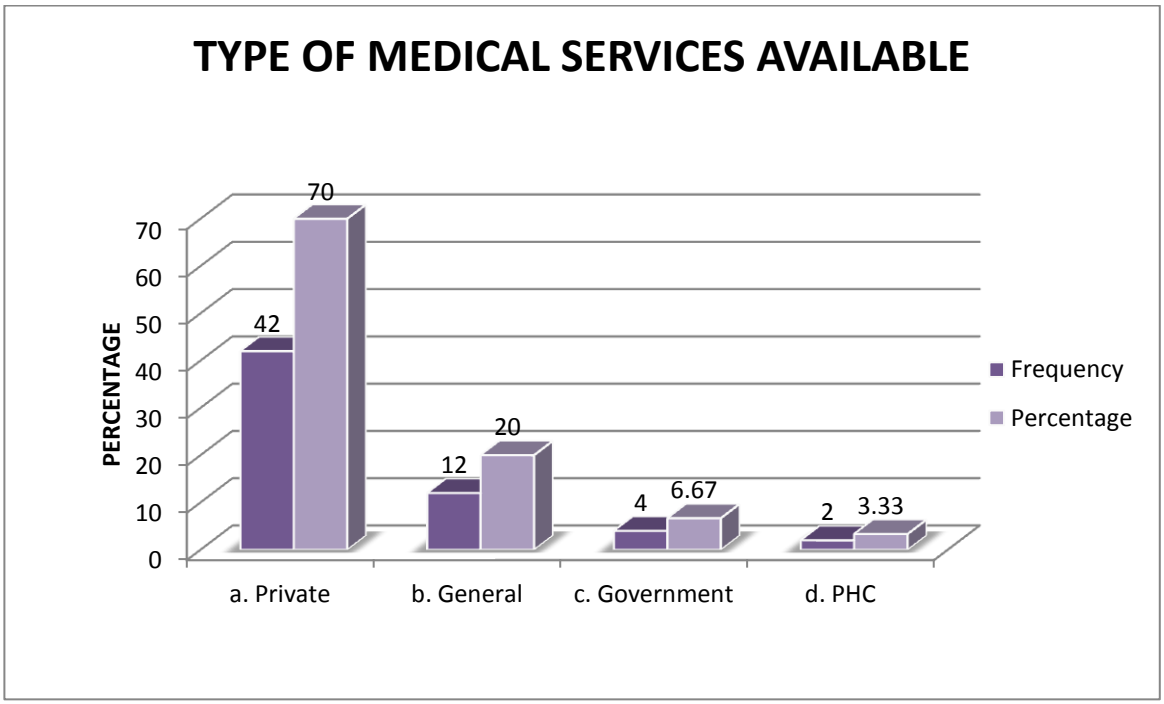

Figure-4.6: Distribution of antenatal mothers according to the type of medical services available

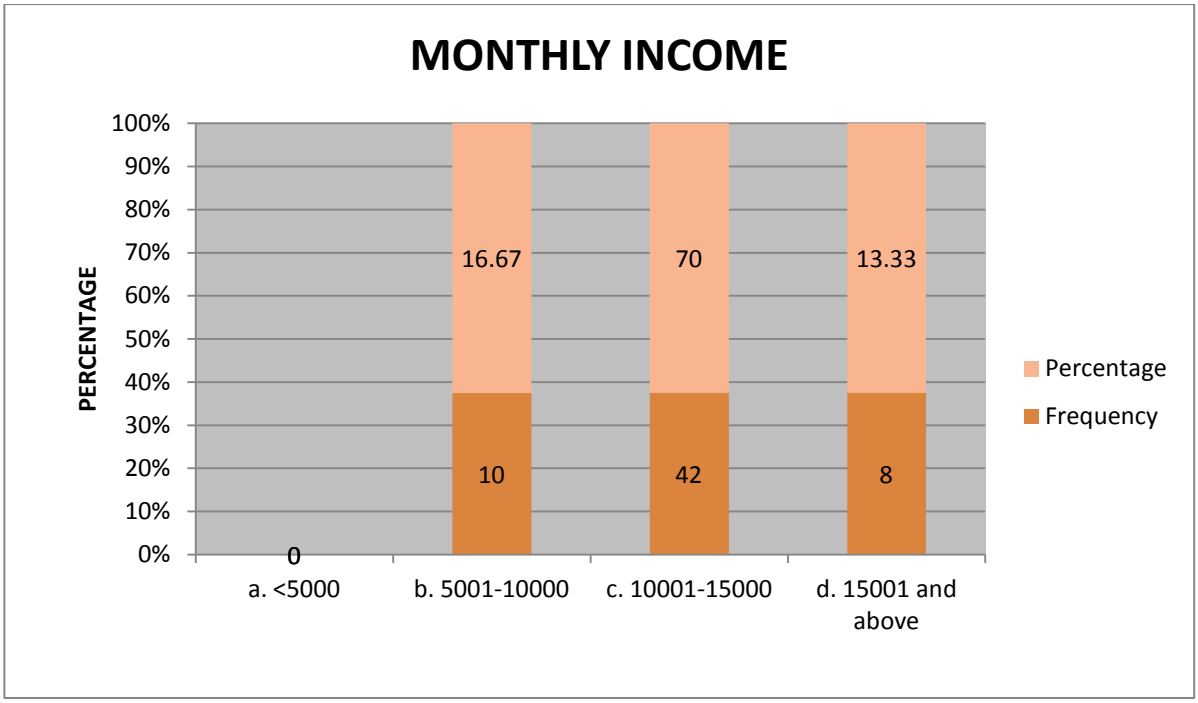

Figure-4.7: Distribution of antenatal mothers according to the monthly income in Rs.

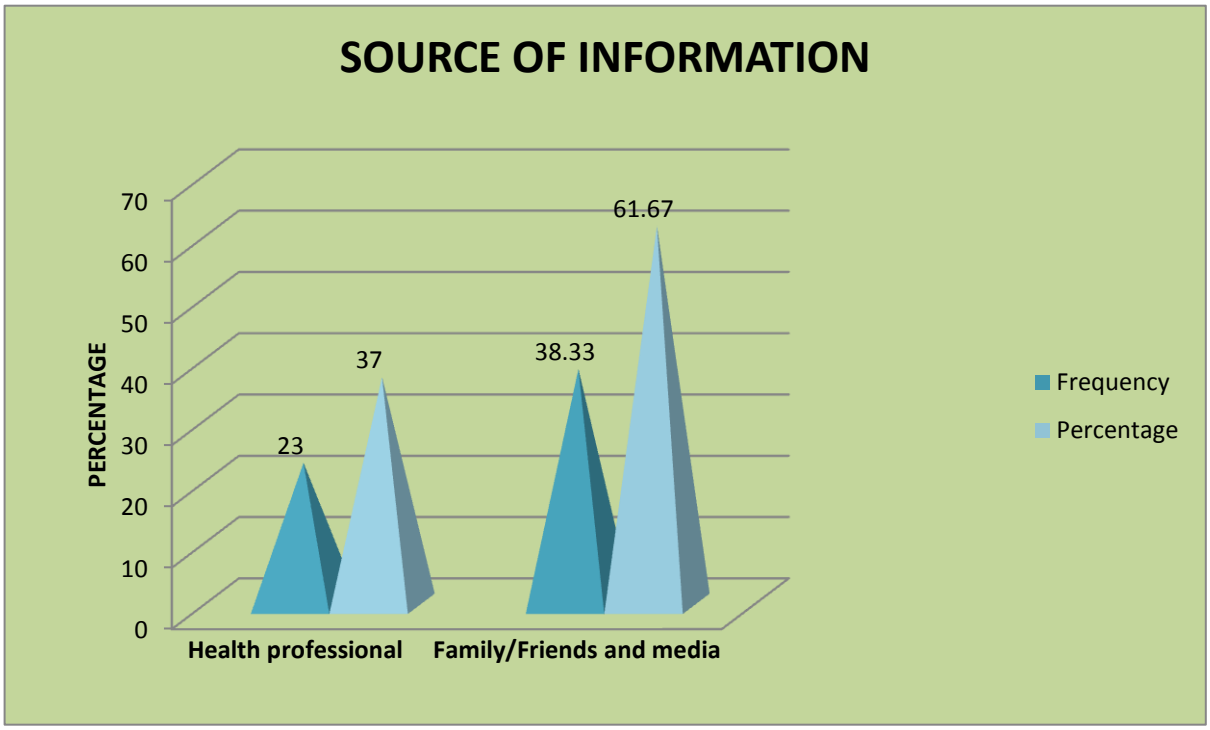

Figure-4.8: Distribution of antenatal mothers according to the source of information.

- With regard to the age of antenatal mothers, majority 25(41.67%) of them belongs to the age group of 26-30 years, 17(28.33%) were 20-25 years, 10(16.67%) were 31-35years, remaining were 08(1-3.33%) above 36 years.
- With regard to the type of family of antenatal mothers, majority 48(80.0%) of them belongs to the joint family, 12(20.0%) belongs to nuclear family.
- When considering the educational status of antenatal mothers majority 23(38.3%) of them are graduate, 20(33.3%) are diploma holders, 12(20.0%) are post graduate and 5(8.3%) of them are illiterate.
- With regard to occupational status of antenatal mothers, majority 31(51.67%) of them are employed part time , 17(28.3%) were full time employed, 12(20.0%) were unemployed and 0 doing own business.
- With regard to religion, majority 49(81.7%) of them were Christians and 09(15%) were Hindu, 01(1.7%) was Muslim and 01(1.7%) was other religion.
- When considering the medical services available , majority 42(70.0%) of them were taking private services,12(20.0%) of them are general services and another 4(6.67%) taking government medical services and 2(3.33%) were going PHC.
- With regard to the family monthly income of Antenatal mothers, majority 42(70.0%) had income of Rs.10001-15001.10(16.7%) had income of 5001-10000 and 8(13.3%) had income of above Rs.15000.
- In relation to source of information, majority 37(61.67%) had information from family and media, and 23(38.33%) had information from health professional.

SECTION -II

DATA ON COMPARING THE PRE-TEST AND POST-TEST LEVEL OF KNOWLEDGE SCORE AFTER SELF-INSTRUCTIONAL MODULE (SIM) ON STEM CELL AND CORD BLOOD BANKING AMONG ANTENATAL MOTHERS.

Table- 4.2: Assessment of the pre-test knowledge of antenatal mothers

N=60

Aspects of Knowledge	Inadequate (0- 50%)		Moderate (51-74%)		Adequate (75-100%)	
	No	%	No	%	No	%
General aspects of stem cell banking	28	46.67	30	50	2	3.33
Indications of stem cell therapy	10	16.67	45	75	5	8.33
Techniques of stem cell banking	58	96.67	2	3.33	0	0
Complications	60	100	0	0	0	0
Overall	60	100	0	0	0	0

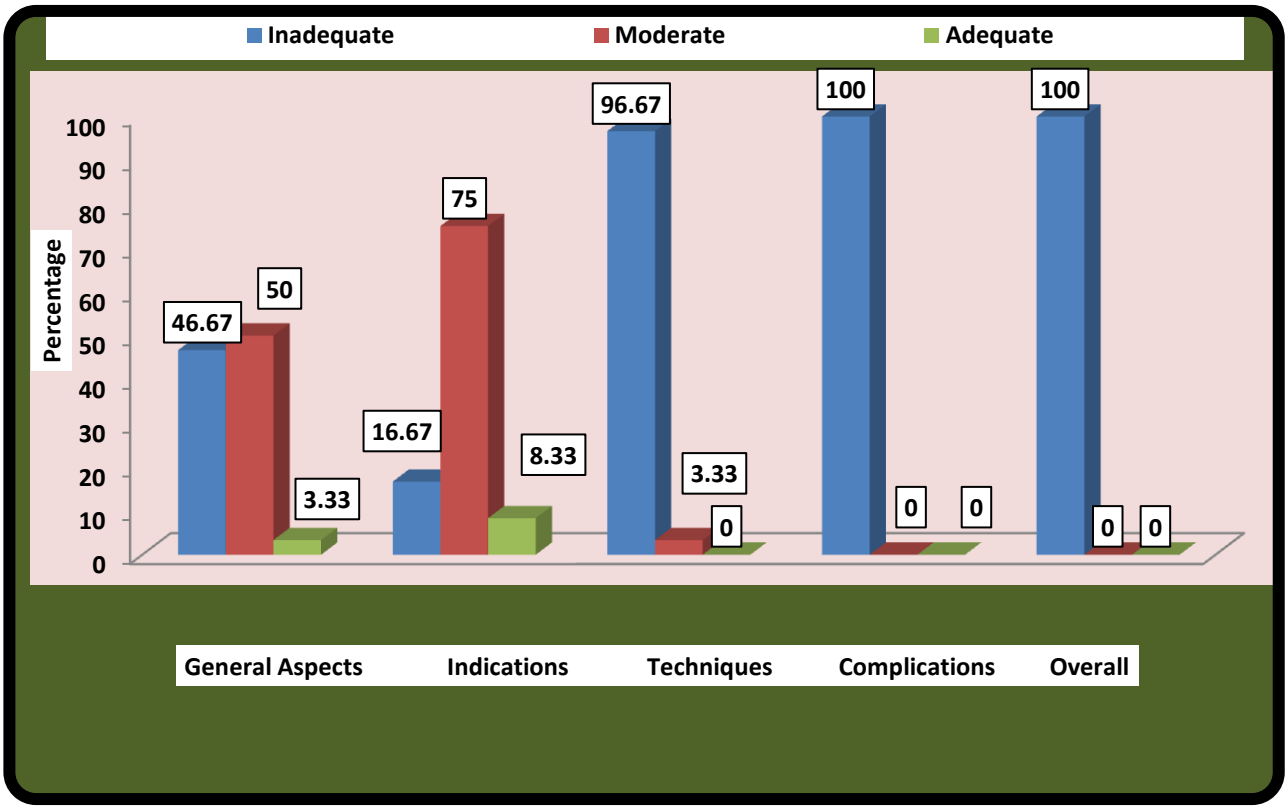

Figure: 4.9. Pre-test knowledge of antenatal mothers

- Table 4.2 and figure 4.9 shows, in the pre-test, knowledge of antenatal mothers on general aspects of stem cell banking, majority 30(50.0%) of subjects had moderate knowledge, 28 (46.67%) of them had inadequate, whereas 02(3.33%) of subjects had adequate knowledge.
- Regarding indications on stem cell therapy , majority of antenatal mothers , 45(75%) of subjects had moderate knowledge, 10(16.67%) of them had inadequate knowledge, whereas 5(8.33%) of subjects had knowledge.
- When considering techniques of cell majority 58(96.67%) of subjects had inadequate knowledge, 2(3.33%) had moderate and no subjects had adequate knowledge.

- In relation to knowledge on complications of stem cell therapy, all the subjects had inadequate knowledge.

Table-4.3:Assessment of the post-test knowledge of antenatal mothers

N=60

Aspects	**Inadequate (0- 50%)**		**Moderate (51-74%)**		**Adequate (75-100%)**	
	No	**%**	**No**	**%**	**No**	**%**
General aspects of stem cell banking	1	1.67	4	6.67	55	91.67
Indications of stem cell banking	0	0	14	23.33	46	76.67
Techniques of stem cell banking	2	3.33	17	28.33	41	68.33
complications	0	0	11	18.33	49	81.67
Overall	0	0	10	16.67	50	83.33

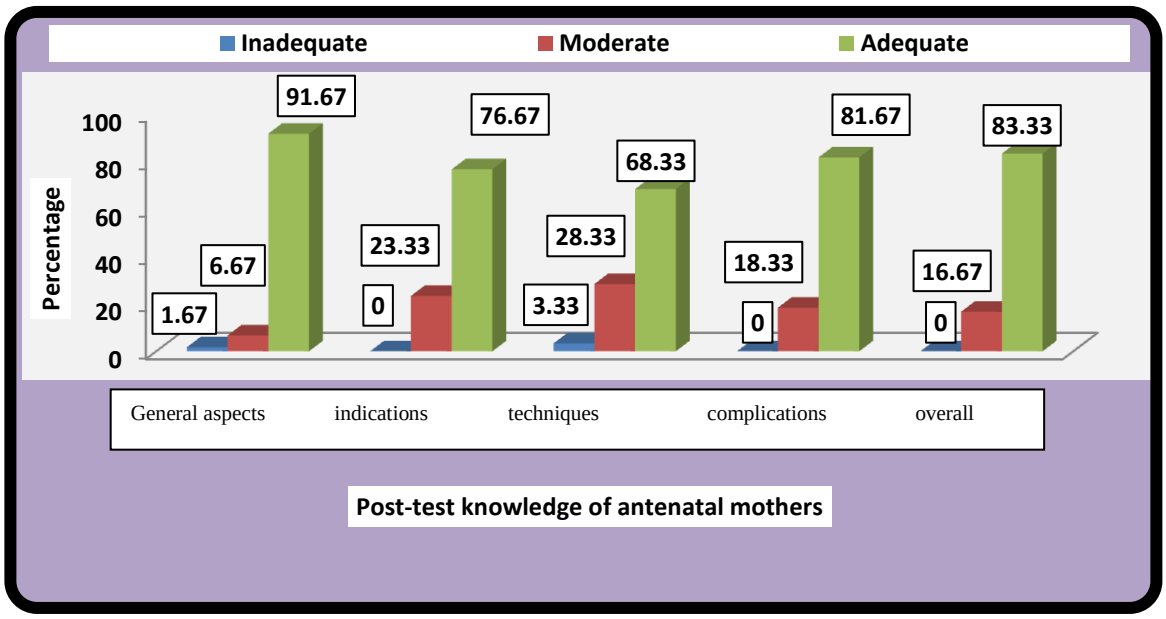

Figure-4.10: Post-test knowledge of antenatal mothers

- Table:4.3 and Figure: 4.10 shows that, in the post test, knowledge of antenatal mothers on general aspects, majority 55(91.67%) of subjects had adequate knowledge, 4(6.67%) of them had moderate knowledge, whereas 1(1.67%) had inadequate knowledge.
- When considering indications of stem cell therapy, 46(76.67%) had adequate knowledge, 14(23.33%) of them had moderate knowledge.
- With regard to techniques on stem cell therapy , majority 41(68.33%) of subjects had adequate knowledge, 17(28.33%) of them had moderate knowledge and 2(3.33%) had inadequate knowledge.
- In relation to complications, majority 49(81.67%) subjects had adequate knowledge, 11(18.33%) had moderate knowledge.

SECTION -III

DATA ON COMPARING THE PRE-TEST AND POST-TEST LEVEL OF ATTITUDE SCORE AFTER SELF-INSTRUCTIONAL MODULE (SIM) ON STEM CELL AND CORD BLOOD BANKING AMONG ANTENATAL MOTHERS.

Table 4.4 Percentage and frequency distribution of attitude of antenatal mothers regarding stem cell banking.

N=60

Attitude	Score	No of Respondents	
		No	%
Unfavourable attitude (poor)	0-50%	42	70
Moderate attitude	50--74%	18	30
Favourable attitude (good)	75-100%	0	0

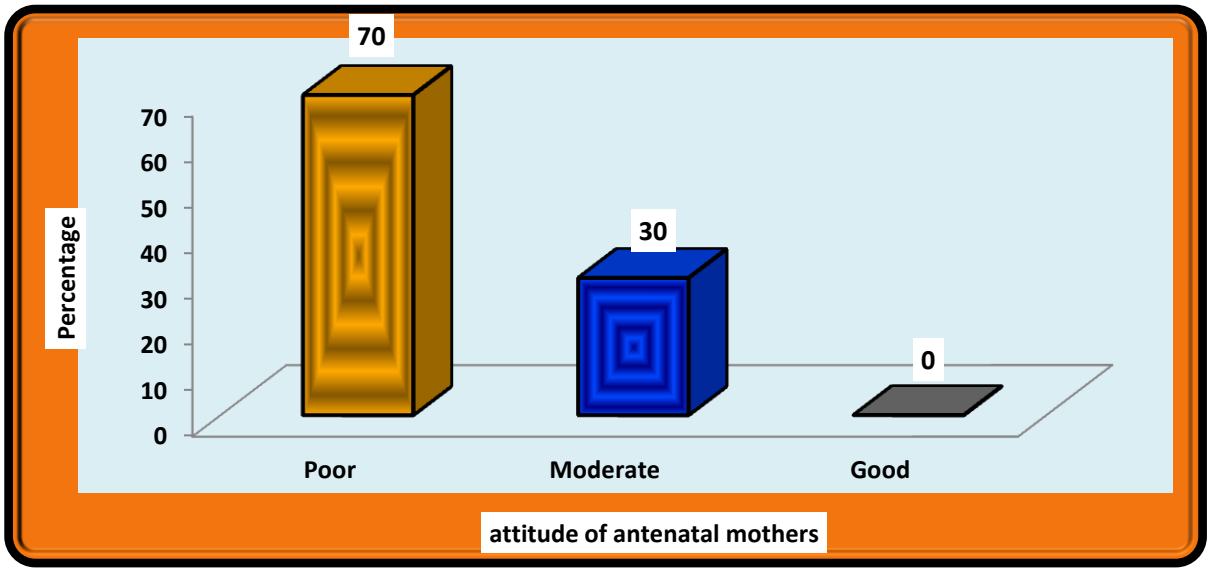

Figure-4.11: Distribution of antenatal mothers according to attitude regarding stem cell banking.

- Table 4.4 depict that 42 (70%) antenatal mothers were have Unfavourable attitude, 18(30%) were having Moderate attitude and 0 (0%) were found to have favourable attitude on stem cell banking.

Table:4.5 Mean, standard deviation & mean percentage of antenatal mothers according to attitude regarding stem cell banking.

N=60

Domain	**Max Statements**	**Max Score**	**Range**	**Mean**	**SD**	**Mean%**
Attitude	23	23	8--21	10.85	3.57	47.17

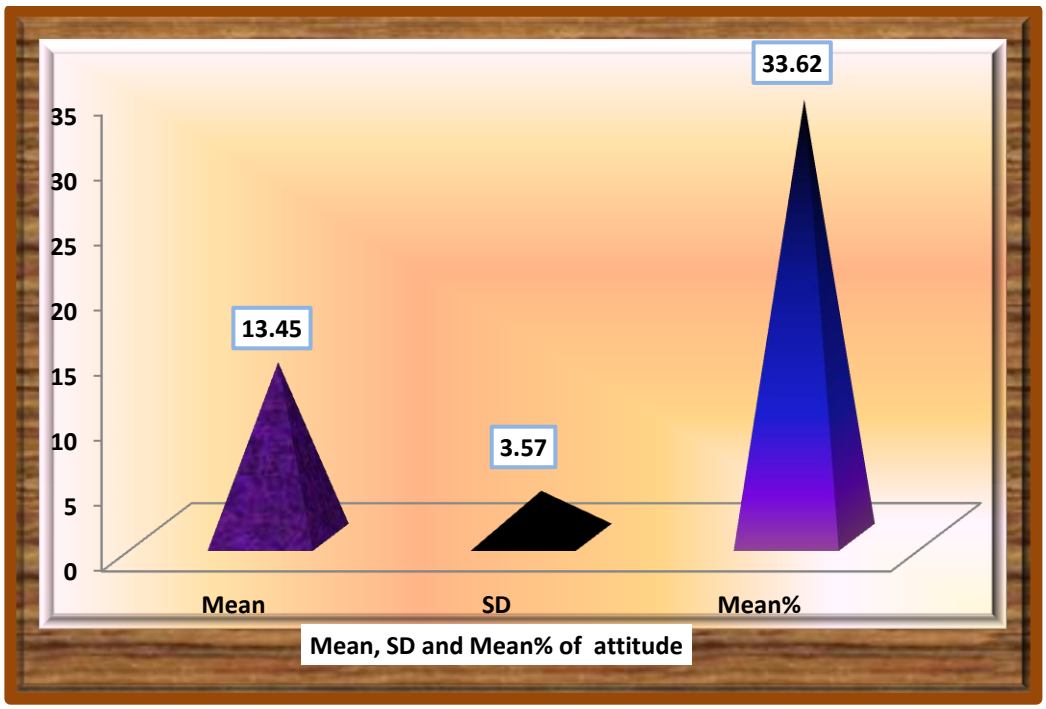

Figure-4.12: Mean Percentage distribution of antenatal mothers attitude regarding stem cell banking.

- Above table represents, Mean, Mean score and SD of aspects of antenatal mothers according to attitude regarding stem cell banking.
- The highest Mean score of subject is 23 with SD of 3.57 and 10.85 Mean score percentage of antenatal mothers according to attitude regarding stem cell banking. This indicates that the antenatal mothers have moderately favourable attitude regarding stem cell banking.

Table-4.6 Percentage and frequency distribution of antenatal mothers a according to level of attitude regarding stem cell banking before and after (SIM).

N=60

Attitude	**Antenatal Mothers Level of Attitude**			
	Pre test		**Post test**	
	No.	**%**	**No.**	**%**
Unfavourable (≤50%)	3	5	-	-
Moderately favourable (51-74%)	57	95	2	3.3
Favourable (> 75%)	-	-	58	96.7
Total	60	100	60	100

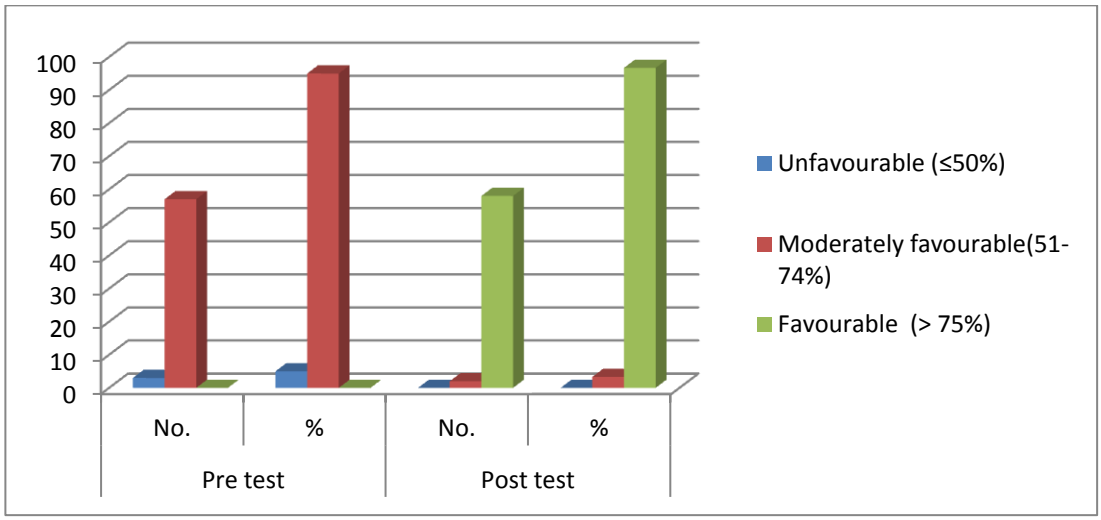

Figure-4.13 Percentage and frequency distribution of antenatal mothers a according to level of attitude regarding stem cell banking before and after (SIM).

Table-4.6 show depict the frequency and percentage distribution of overall level of attitude of antenatal mothers in pre test and post test. In the pre test majority 75(95.0%) had moderate level of attitude and remaining 3(5.0%) had poor level of attitude. Whereas in the post test all 58 subjects had (96.7%) adequate level of attitude and the rest 2(3.3%) had moderate level of attitude.

Table -4.7 Mean, Standard deviation and Mean Percentage attitude of antenatal mothers regarding stem cell banking before and after (SIM).

N=60

S.No	Aspects of attitude	Max.	Pre-test			Post-test		
		Score	Mean	SD	Mean (%)	Mean	SD	Mean (%)
1	About general information	9	6.45	1.03	71.6	8.57	0.81	95.2
2	About stem cell therapy	9	6.38	1.13	70.8	8.23	1.06	91.4
3	About indication	12	8.53	1.18	71.1	10.52	1.38	85
4	About need for stem cell banking	15	10.1	1.48	67.3	12.77	1.66	85.1
5	About complications	15	10.17	1.41	67.8	13.68	1.14	91.2
Over all		60	41.63	2.98	69.4	53.77	2.83	89.6

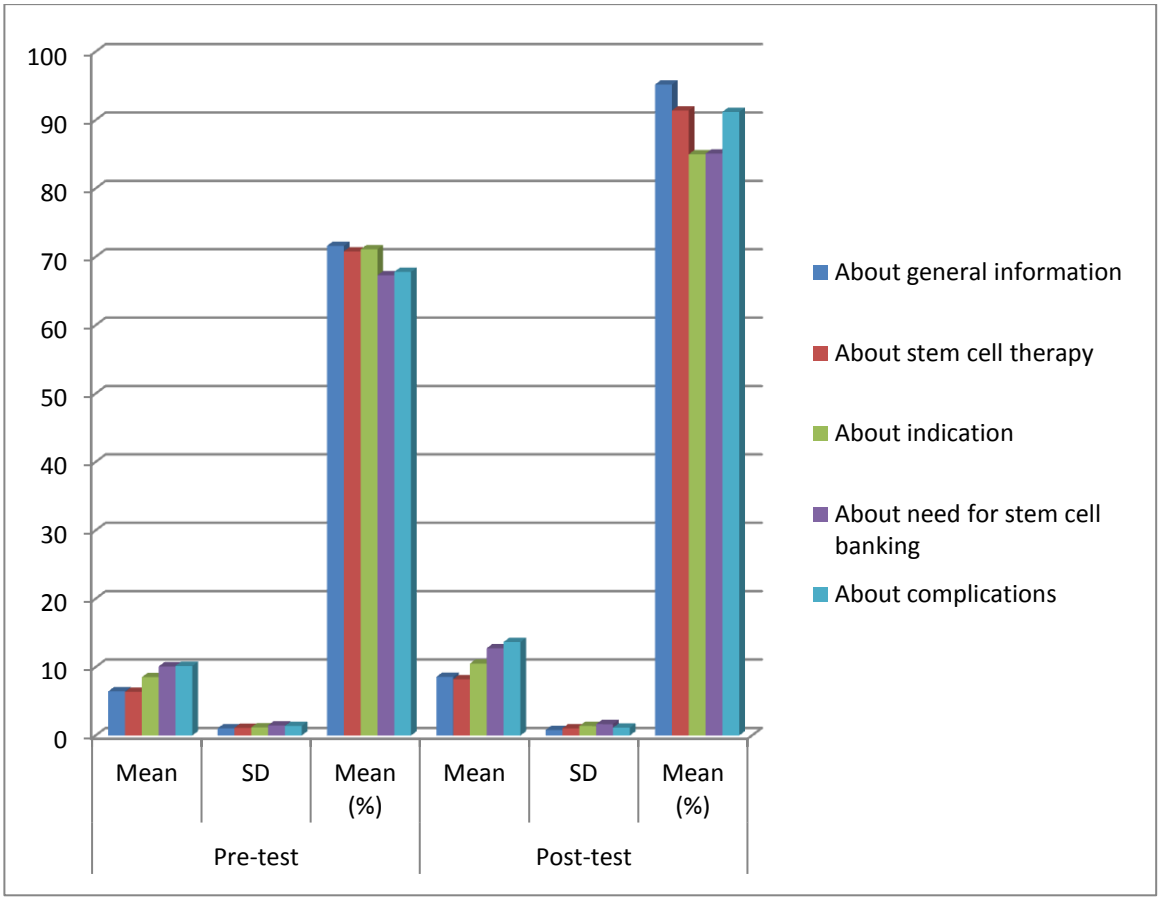

Figure-4.14 Mean, Standard deviation and Mean Percentage attitude of antenatal mothers regarding stem cell banking before and after (SIM).

The table-4.7 depicts the mean, SD and mean score percentage obtained for the aspects of attitude of antenatal mothers regarding stem cell banking in pre test and post test.

Regarding knowledge in general information on stem cell banking, a mean value of 6.45 with SD 1.03 was observed in pre-test; where as in post test mean observed was 8.57 and SD 0.81, the mean percentage increased from 71.6% in pre test to 95.2% in the post test.

Considering stem cell therapy, in pre test the mean value was 6.38 and SD 1.13. In the post test the mean value was 8.23 and SD= 1.06, the mean percentage increased from 70.8% in pre test to 91.4% in post test.

Regarding the aspect of indication, the mean value was 8.53 and SD 1.18. In the post test the mean value was 10.52 and SD= 1.38, the mean percentage increased from 71.1% in pre test to 85% in post test.

In respect to need for stem cell banking, in pre test the mean value was 10.1 and SD 1.48. In the post test the mean value was 12.77 and SD= 01.66, the mean percentage increased from 67.3% in pre test to 85.1% in post test.

Considering complications, in pre test the mean value was 10.17 and SD 1.41. In the post test the mean value was 13.68 and SD= 1.14, the mean percentage increased from 67.8% in pre test to 91.2% in post test.

In overall, the mean value was 41.63 and SD 2.98. In the post test the mean value was 53.77 and SD= 2.83, the mean percentage increased from 69.4% in pre test to 89.6% in post test.

It is inferred that in this study there was a significant increase in mean percentage in the post test compared to mean percentage of pre test.

SECTION -IV

DATA TO ASSESS THE EFFECTIVENESS OF SELF-INSTRUCTIONAL MODULE (SIM) AMONG ANTENATAL MOTHERS ON KNOWLEDGE REGARDING STEM CELL AND CORD BLOOD BANKING.

This section deals with comparison between pre-test and post-test scores of knowledge of antenatal mothers on stem cell banking.

Table-4.8: Comparison between pre-test and post- test scores of knowledge of antenatal mothers.

Level of knowledge	Pre test		Post test	
	No	%	No	%
Inadequate (0-50%)	60	100	0	0
Moderate (51--74%)	0	0	10	16.67
Adequate (75-100%)	0	0	50	83.33

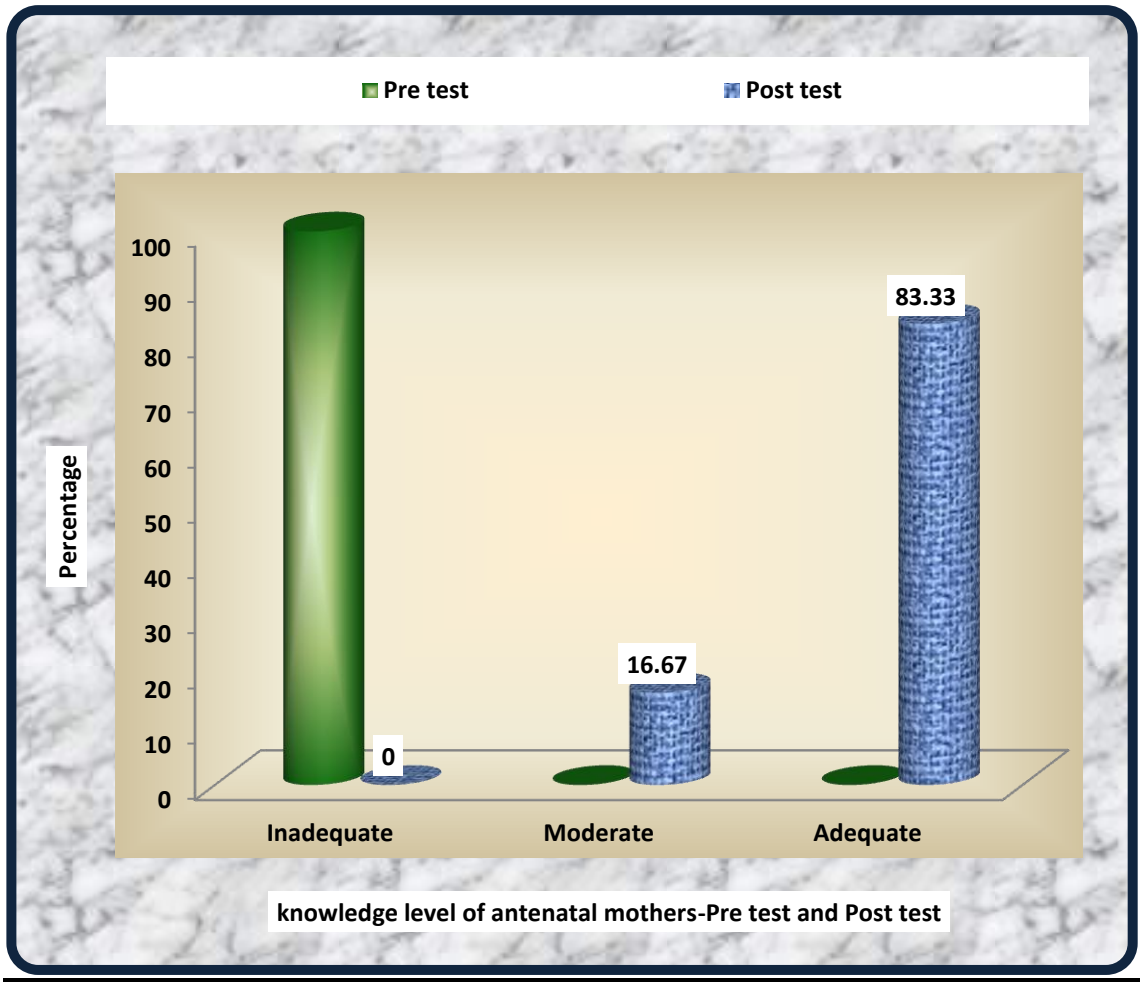

Figure-4.15: Comparison between pre-test and post- test scores of knowledge of antenatal mothers

Table 4.8 And Figure 4.15 shows that the Comparison between pre and post test scores on knowledge of antenatal mothers.

- In pre-test all the antenatal mothers 60 (100%) had inadequate level of knowledge. In post-test all antenatal mothers have showed improvement in their knowledge, 10(16.67%) of antenatal mothers possessed moderate level of knowledge and rest of them 50 (83.33%) possessed adequate level of

knowledge. This showed that the SIM was highly effective in improving the knowledge of antenatal mothers.

Table-4.9: Mean, SD, and mean percentage for the variable in the pre and post test

Aspects	Pre test			Post test		
	Mean	SD	Mean %	Mean	SD	Mean %
Knowledge on general aspects	3.58	0.94	51.19	6.4	0.94	92.14
Knowledge on indications of stem cell therapy	0.91	0.49	48.83	1.6	0.49	80
Knowledge on techniques	2.06	0.73	29.52	6	1.09	85.71
Knowledge on complications	2.8	1.18	17.7	14	1.85	80
Overall	9.4	2.18	29.38	28.86	3.09	89.58

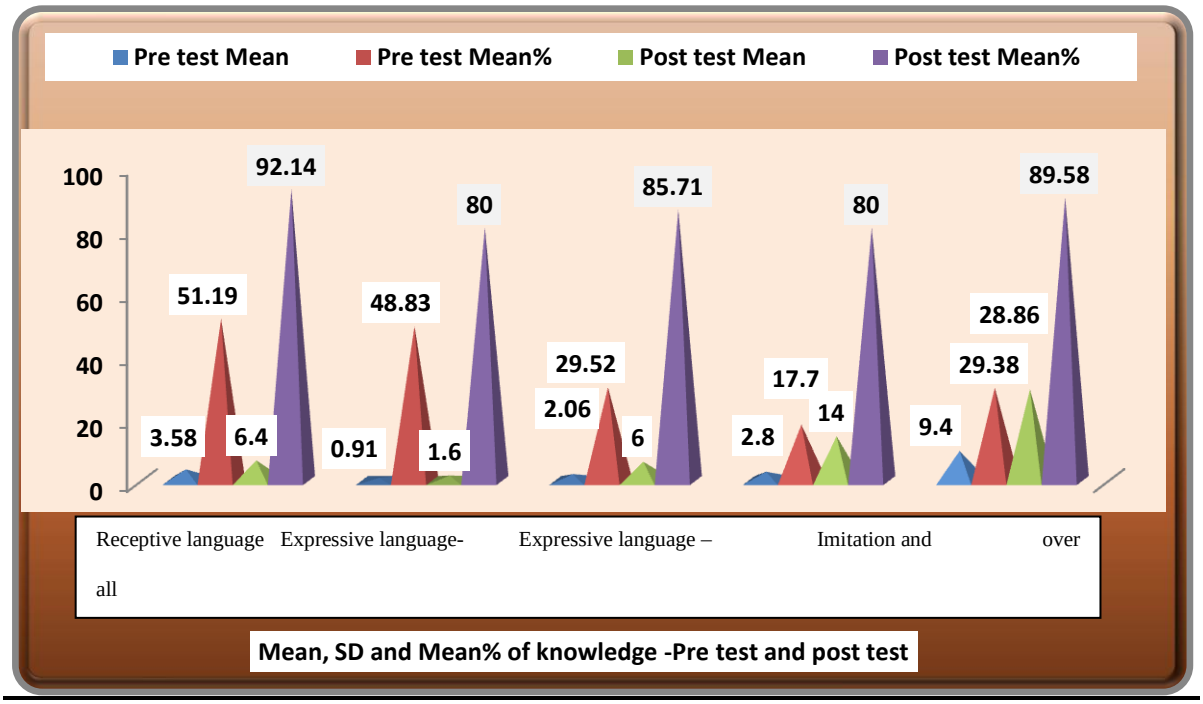

Figure-4.16: Mean Percentage distribution of antenatal mothers according to level of knowledge in various aspects.

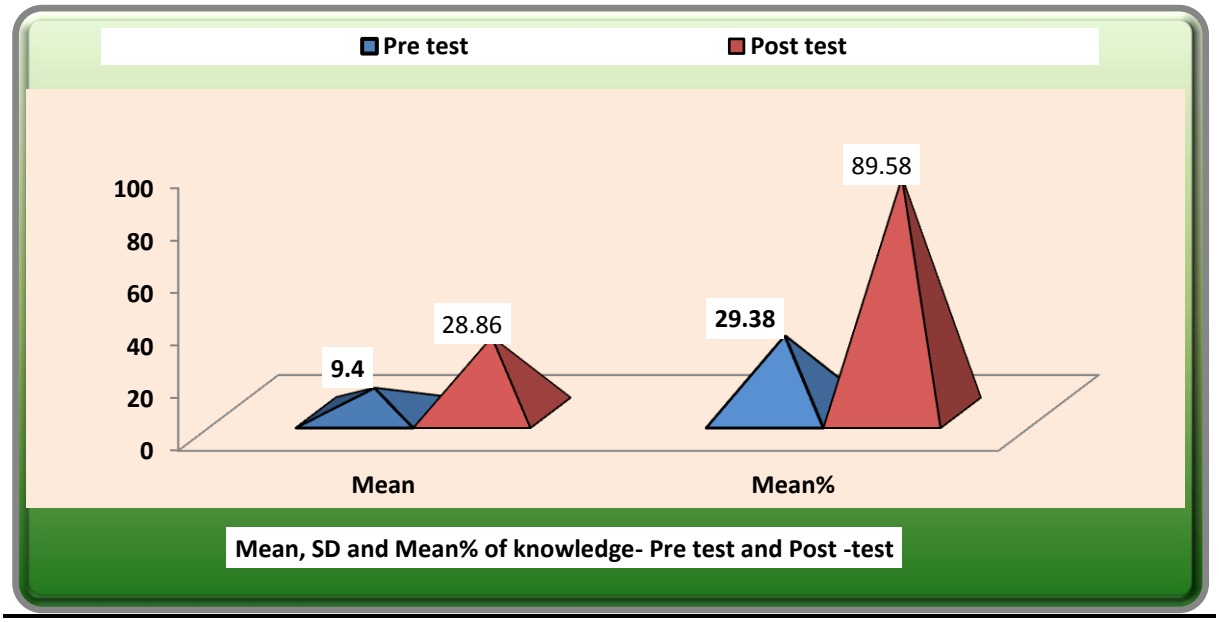

Figure-4.17: Over all Mean Percentage distribution of antenatal mothers according to level of knowledge in various aspects.

- In relation to the pre-test score of antenatal mothers according to level of knowledge the mean, SD and mean percentage was 9.4, 2.18 and 29.38 respectively.
- In relation to the post-test score of antenatal mothers according to level of knowledge the mean, SD and mean percentage was 28.86, 3.09 and 89.58 respectively.

Table-4.10, Improvement of mean score of variables between pre and post test score.

Aspects of knowledge	Pre test			Post test			Paired 't' test
	Mean	SD	Mean %	Mean	SD	Mean %	
Knowledge on general aspects	3.58	0.94	51.19	6.4	2.22	92.14	11.86***

Knowledge on indications of stem cell therapy	0.91	0.49	48.83	1.6	1.16	80	5.99**
Knowledge on techniques	2.06	0.73	29.52	6	2.02	85.71	17.31***
Knowledge on complications	2.8	1.18	17.7	14	3.55	80	29.91***
Overall	9.4	2.18	29.38	28.86	3.09	89.58	30.51***

N.S- Not Significant *S- Significant at p<0.05 level

- In relation to knowledge of antenatal mothers on general aspects, the obtained mean and SD of pre-test and post-test were 3.58, 6.4 and 0.94, 2.22, and paired 't' value was 11.86
- Improvement of knowledge on indications of stem cell therapy obtained mean and SD of pre-test and post-test were 0.91, 1.6 and 0.49, 1.16 and paired 't' value was 5.99.
- In regard to Knowledge on techniques, obtained mean and SD of pre-test and post-test were 2.06, 6 and 0.73, 2.02 and paired't' value was17.3.
- Improvement of Knowledge on complications, the obtained mean and SD of pre-test and post-test were 2.8, 14 and 1.18,3.55 and paired 't' value was 29.91.

Table -4.11: Mean score of the overall level of knowledge between pre-test and post-test score.

N=60

Knowledge level	Mean	SD	Mean %	Paired test
Pre test	9.4	2.18	29.38	30.51***
Post test	28.86	3.09	89.58	

NS= not significant. S= Significant, * $p < 0.05$ level, ** $p < 0.01$ level, *** $p < 0.001$ level.

SECTION –V

DATA ON ASSOCIATION BETWEEN POST-TEST LEVEL OF KNOWLEDGE SCORE AND ATTITUDE SCORE WITH THEIR SELECTED DEMOGRAPHIC VARIABLES AMONG ANTENATAL MOTHERS.

Association of post test level of knowledge and demographic variables of antenatal mothers using chi squire.

Table -4.12: Association of post-test knowledge of antenatal mothers with demographic variables.

N=60

S.No	Demographic variables	No	%	Level of Knowledge				df	Chi square
				< Median (27)		≥ Median (33)			
				No	%	No	%		
1	Age								
	a. 20--25years	17	28.3	12	44.4	5	15.2	3	7.59*
	b. 26--30 years	25	41.7	8	29.6	17	51.5		
	c. 31--35years	10	16.7	5	18.5	5	15.2		
	d. 36 years and above	8	13.3	2	7.4	6	18.2		
2	Type of family								
	a. Nuclear	12	20	7	25.9	5	15.2	1	1.07
	b. Joint	48	80	20	74.1	28	84.8		
3	Educational status								
	a. Diploma	20	33.3	10	37	10	30.3	3	2.67
	b. Graduate	23	38.3	12	44.4	11	33.3		
	c. Post graduate	12	20	3	11.1	9	27.3		
	d. Illiterate	5	8.33	2	7.4	3	9.1		
4	Occupational status								
	a .Employed/ fulltime	17	28.3	13	48.1	4	12.1	2	9.49*
	b. Employed/part-time	31	51.7	10	37	21	63.6		
	c. Unemployed	12	20	4	14.8	8	24.2		
	d. own business	0	0	0	0	0	0		

5	Religion								
	a. Christian	49	81.7	20	74.1	29	87.9	3	3.19
	b. Hindu	9	15	5	18.5	4	12.1		
	c. Muslim	1	1.67	1	3.7	0	0		
	d. Others	1	1.67	1	3.7	0	0		
6	Type of medical services available								
	a. Private	42	70	17	63	25	75.8	3	6.99
	b. General	12	20	9	33.3	3	9.1		
	c. Government	4	6.67	1	3.7	3	9.1		
	d. PHC	2	3.33	0	0	2	6.1		
7	Monthly income								
	a. <5000	0	0	0	0	0	0	2	2.2
	b. 5001-10000	10	16.7	6	22.2	4	12.1		
	c. 10001-15000	42	70	19	70.4	23	69.7		
	d. 15001 and above	8	13.3	2	7.4	6	18.2		
8	Source of information								
	a. Health professional	23	38.3	6	22.2	17	51.5	1	5.39*
	b. Family/friends and media	37	61.7	21	77.8	16	48.5		

N.S- Not Significant *S- Significant at p<0.05 level

- The chi-square value of 7.59* that was significant at p<0.05 level showing that there was an association between type of family and level of knowledge among antenatal mothers.
- The chi-square value of 9.49* is significant at p<0.05 level shows that there was an association between educational status of antenatal mothers and level of knowledge among antenatal mothers.
- The chi-square value of 5.39* that is significant at p<0.05 level shows that there was an association between occupational status and level of knowledge among antenatal mothers.

Table -4.13: Association of post-test attitude score of antenatal mothers with 4demographic variable

N=60

S. No	Demographic variables	No	%	Attitude						df	Chi square
				FA		MA		UA			
				No	%	No	%	No	%		
1	Age										
	a. 20--25years	17	28.3	16	26.7	1	1.7	0	0	3	1.54
	b. 26--30 years	25	41.7	25	41.7	0	0.0	0	0		
	c. 31--35years	10	16.7	9	15.0	1	1.7	0	0		
	d. 36 years and above	8	13.3	8	13.3	0	0	0	0		
2	Type of family										
	a. Nuclear	12	20	11	18.3	1	1.7	0	0	1	2.38
	b. Joint	48	80	47	78.3	1	1.7	0	0		
3	Educational status										
	a. Diploma	20	33	20	33.3	0	0	0	0	3	7.64
	b. Graduate	23	38	22	36.7	1	1.7	0	0		
	c. Post graduate	12	20	11	18.3	1	1.7	0	0		
	d. Illiterate	5	8.3	5	8.3	0	0.0	0	0		
4	Occupational status										
	a .Employed/ fulltime	17	28.3	17	28.3	0	0	0	0	3	6.45
	b. Employed/part-time	31	51.7	30	50.0	1	1.7	0	0		
	c. Unemployed	12	20	11	18.3	1	1.7	0	0		
	d. own business	0	0	0	0.0	0	0	0	0		
5	Religion										
	a. Christian	49	81.7	47	78.3	2	3.3	0	0	3	2.65
	b. Hindu	9	15.0	9	15.0	0	0	0	0		
	c. Muslim	1	1.7	1	1.7	0	0	0	0		
	d. Others	1	1.7	1	1.7	0	0	0	0		
6	Type of medical services available										
	a. Private	42	70.0	40	66.7	2	3.3	0	0	3	9.16*
	b. General	12	20.0	12	20.0	0	0	0	0		
	c. Government	4	6.7	4	6.7	0	0	0	0		
	d. PHC	2	3.3	2	3.3	0	0	0	0		
7	Monthly income										
	a. <5000	0	0	0	0.0	0	0	0	0	3	6.87
	b. 5001-10000	10	16.7	8	13.3	2	3.3	0	0		
	c. 10001-15000	42	70	42	70.0	0	0	0	0		
	d. 15001 and above	8	13.3	8	13.3	0	0	0	0		
8	Source of information										
	a. Health professional	23	38.3	22	36.7	1	1.7	0	0	1	1.04

	b. Family/friends and media	37	61.7	36	60.0	1	1.7	0	0		

N.S- Not Significant *S- Significant at p<0.05 level

- The chi-square value of 9.16* that was significant at p<0.05 level showing that there was an association between type of medical services and score of attitude among antenatal mothers.

Summary

This chapter deals with the analysis and interpretation of the data using descriptive and inferential statistics. The data analysis was carried out on the basis of objectives and hypothesis of the study and has been prepared in tables and figures.

Frequency and percentage were used to represent the sample characteristics and also to assess the knowledge on selected aspects of stem cell banking among antenatal mothers. Frequency, percentage, mean, standard deviation, and mean percentage were used to compare between pre-test and post-test level of knowledge and attitude of antenatal mothers .Chi square test was used to assess the effectiveness of self-instructional module (SIM) on knowledge and attitude regarding stem cell and cord blood banking. Chi-square test was used to associate between knowledge scores and demographic variables of the samples. Self-instructional module (SIM) was found to be effective in increasing the knowledge and attitude scores of antenatal mothers. There was association between the post-test knowledge score and variables like family type, educational status, and qualification.

CHAPTER V

DISCUSSION

This chapter deals with discussion part according to the results, obtained from statistical analysis based on the data of the study, the reviewed literature, hypothesis which was selected for the study. The purpose of the study is to assess the effectiveness of self instructional module(SIM) on knowledge and attitude regarding stem cell and cord blood banking among antenatal mothers.

Characteristics of the Demographic Variables

Sample characteristics

- With regard to the age of antenatal mothers, majority 25(41.67%) of them belongs to the age group of 26-30 years, 17(28.33%) were 20-25 years, 10(16.67%) were 31-35years, remaining were 08(1-3.33%) above 36 years.
- With regard to the type of family of antenatal mothers, majority 48(80.0%) of them belongs to the joint family, 12(20.0%) belongs to nuclear family.
- When considering the educational status of antenatal mothers majority 23(38.3%) of them are graduate, 20(33.3%) are diploma holders, 12(20.0%) are post graduate and 5(8.3%) of them are illiterate.
- With regard to occupational status of antenatal mothers, majority 31(51.67%) of them are employed part time, 17(28.3%) were full time employed, 12(20.0%) were unemployed and 0 doing own business.
- With regard to religion, majority 49(81.7%) of them were Christians and 09(15%) were Hindu, 01(1.7%) was Muslim and 01(1.7%) was other religion.
- When considering the medical services available, majority 42(70.0%) of them were taking private services, 12(20.0%) of them are general services and another 4(6.67%) taking government medical services and 2(3.33%) were going PHC.

- With regard to the family monthly income of Antenatal mothers, majority 42(70.0%) had income of Rs.10001-15000.10(16.7%) had income of 5001-10000 and 8(13.3%) had income of above Rs.15001.
- In relation to source of information, majority 37(61.67%) had information from family and media, and 23(38.33%) had information from health professional.

The pre-test and post-test level of knowledge score after self-instructional module (SIM) on stem cell and cord blood banking among antenatal mothers.

- Table 4.2 and figure 4.9 shows, in the pre-test, knowledge of antenatal mothers on general aspects of stem cell banking, majority 30(50.0%) of subjects had moderate knowledge, 28 (46.67%) of them had inadequate, whereas 02(3.33%) of subjects had adequate knowledge.
- Regarding indications on stem cell and cord blood banking, majority of antenatal mothers , 45(75%) of subjects had moderate knowledge, 10(16.67%) of them had inadequate knowledge, whereas 5(8.33%) of subjects had knowledge.
- When considering techniques of cell majority 58(96.67%) of subjects had inadequate knowledge, 2 (3.33%) had moderate and no subjects had adequate knowledge.
- In relation to knowledge on complications of stem cell and cord blood banking, all the subjects had inadequate knowledge.
- Above table represents, Mean, Mean score and SD of aspects of antenatal mothers according to attitude regarding stem cell banking.
- The highest Mean score of subject is 23 with SD of 3.57 and 10.85 Mean score percentage of antenatal mothers according to attitude regarding stem cell banking. This indicates that the antenatal mothers have moderately favourable attitude regarding stem cell banking
- In pre-test all the antenatal mothers 60 (100%) had inadequate level of knowledge.
- In post-test all antenatal mothers have showed improvement in their knowledge, 10(16.67%) of antenatal mothers possessed moderate level of knowledge and rest of them 50 (83.33%) possessed adequate level of knowledge. This showed that the self-

instructional module (SIM) was highly effective in improving the knowledge of antenatal mothers.

The pre-test and post-test level of attitude score after self-instructional module (SIM) on stem cell and cord blood banking among antenatal mothers.

- Table 4.4 and fig 4.11,depict that 42 (70%) antenatal mothers were have Unfavourable attitude, 18(30%) were having Moderate attitude and 0 (0%) were found to have favourable attitude on stem cell banking
- Table 4.5and fig 4.12 represents, Mean, Mean score and SD of aspects of antenatal mothers according to attitude regarding stem cell banking.
- The highest Mean score of subject is 23 with SD of 3.57 and 10.85 Mean score percentage of antenatal mothers according to attitude regarding stem cell banking. This indicates that the antenatal mothers have moderately favourable attitude regarding stem cell banking.
- Table-4.6 show depict the frequency and percentage distribution of overall level of attitude of antenatal mothers in pre test and post test. In the pre test majority 75(95.0%) had moderate level of attitude and remaining 3(5.0%) had poor level of attitude. Whereas in the post test all 58 subjects had (96.7%) adequate level of attitude and the rest 2(3.3%) had moderate level of attitude.

Assess the effectiveness of self-instructional module (SIM) among antenatal mothers.

- In relation to knowledge of antenatal mothers on general aspects, the obtained mean and SD of pre-test and post-test were 3.58, 6.4 and 0.94, 2.22, and paired ‘t’ value was 11.86

- Improvement of knowledge on indications of stem cell therapy obtained mean and SD of pre-test and post-test were 0.91, 1.6 and 0.49, 1.16 and paired 't' value was 5.99.
- In regard to Knowledge on techniques, obtained mean and SD of pre-test and post-test were 2.06, 6 and 0.73, 2.02 and paired 't' value was17.31
- Improvement of Knowledge on complications, the obtained mean and SD of pre-test and post-test were 2.8, 14 and 1.18, 3.55 and paired 't' value was 29.91

Association of post test level of knowledge level and attitude score demographic variables of antenatal mothers.

- The chi-square value of 7.59* was significant at $p<0.05$ level showing that there was an association between type of family and level of knowledge among antenatal mothers.
- The chi-square value of 9.49* was significant at $p<0.05$ level shows that there was an association between educational status of antenatal mothers and level of knowledge among antenatal mothers.
- The chi-square value of 5.39* was significant at $p<0.05$ level shows that there was an association between occupational status and level of knowledge among antenatal mothers.
- The chi-square value of 9.16* that was significant at $p<0.05$ level showing that there was an association between type of medical services and score of attitude among antenatal mothers.

CHAPTER VI

SUMMARY AND RECOMMENDATIONS

Summary

This section provides the process employed in this study. The primary aim of the study was to assess the effectiveness of self-instructional module (SIM) on knowledge and attitude regarding stem cell and cord blood banking among antenatal mothers.

Objectives of the Study

- To determine the level of knowledge of antenatal mothers before and after self instructional module (SIM) on stem cell and cord blood banking.
- To evaluate the effectiveness of self instructional module (SIM) on stem cell and cord blood banking among antenatal mothers in selected hospital.
- To find out the association between post test levels of knowledge score on stem cell banking among antenatal mothers with selected demographic variables.
- To assess the level of attitude score on stem cell banking among antenatal mothers after administration of self instructional module (SIM).

The Study was attempted to examine the following hypotheses:

H_1: The post test level of knowledge score after self instructional module is significantly higher than the pre test level of knowledge score.

H_2: There is a significant association of post-test level of knowledge score with selected demographic variables.

H_3: There will be a significant association of post-test attitude score with selected demographic variables.

Conceptual framework is a theoretical approach to the study of problems that are significantly based and emphasizes the selection, arrangement and classification of

concepts. Conceptual framework refers to interrelated concepts or abstractions that are resembled together in some rational scheme by virtue of their relevance to a common theme.

They serve as a spring board for the generation of hypothesis to be tested. The utility of the conceptual frame models come from the organization of the elements used for the study. It gives a direction to research for relevant questions on the phenomena and points out a solution to practical problems.

The present study aims at evaluating the effectiveness of self-instructional module (SIM) on stem cell and cord blood banking among antenatal mothers to enhance their knowledge and attitude. The conceptual framework of the present study is developed by the investigator based on Imogene king's goal attainment model (1989).

A review of literature enables the investigator to develop the conceptual frame work, methodology for the study and to plan for all data analysis in the most effective and efficient way.

The investigator organized review of literature under the following sections

1. Literature related to knowledge and attitude of antenatal mothers regarding stem cell and cord blood banking.
2. Literature related to the effectiveness of stem cell therapy.

Major findings of the study

- With regard to the age of antenatal mothers, majority 25(41.67%) of them belongs to the age group of 26-30 years, 17(28.33%) were 20-25 years, 10(16.67%) were 31-35years, remaining were 08(1-3.33%) above 36 years.
- With regard to the type of family of antenatal mothers, majority 48(80.0%) of them belongs to the joint family, 12(20.0%) belongs to nuclear family.
- When considering the educational status of antenatal mothers majority 23(38.3%) of them are graduate, 20(33.3%) are diploma holders, 12(20.0%) are post graduate and 5(8.3%) of them are illiterate.
- To occupational status of antenatal mothers, majority 31(51.67%) of them are employed part time, 17(28.3%) were full time employed, 12(20.0%) were unemployed and 0 doing own business.

- With regard to religion, majority 49(81.7%) of them were Christians and 09(15%) were Hindu, 01(1.7%) was Muslim and 01(1.7%) was other religion.
- When considering the medical services available, majority 42(70.0%) of them were taking private services, 12(20.0%) of them are general services and another 4(6.67%) taking government medical services and 2(3.33%) were going PHC.
- With regard to the family monthly income of Antenatal mothers, majority 42(70.0%) had income of Rs.10001-15000.10(16.7%) had income of 5001-10000 and 8(13.3%) had income of above Rs.15001.
- In relation to source of information, majority 37(61.67%) had information from family and media, and 23(38.33%) had information from health professional.

Assessment of the pre-test and post test level of knowledge score after (SIM) among antenatal mothers

- Table 4.2 and figure 4.9 shows, in the pre-test, knowledge of antenatal mothers on general aspects of stem cell banking, majority 30(50.0%) of subjects had moderate knowledge, 28 (46.67%) of them had inadequate, whereas 02(3.33%) of subjects had adequate knowledge.
- Regarding indications on stem cell therapy, majority of antenatal mothers, 45(75%) of subjects had moderate knowledge, 10(16.67%) of them had inadequate knowledge, whereas 5(8.33%) of subjects had knowledge.
- When considering techniques of cell majority 58(96.67%) of subjects had inadequate knowledge, 2 (3.33%) had moderate and no subjects had adequate knowledge.
- In relation to knowledge on complications of stem cell therapy, all the subjects had inadequate knowledge.
- In pre-test all the antenatal mothers 60 (100%) had inadequate level of knowledge.
- In post-test all antenatal mothers have showed improvement in their knowledge, 10(16.67%) of antenatal mothers possessed moderate level of knowledge and rest of them 50 (83.33%) possessed adequate level of knowledge. This showed that the SIM was highly effective in improving the knowledge of antenatal mothers.

Assessment of the pre-test and post-test level of attitude score after (SIM) among antenatal mothers.

- Table 4.4 and fig 4.11,depict that 42 (70%) antenatal mothers were have Unfavourable attitude, 18(30%) were having Moderate attitude and 0 (0%) were found to have favourable attitude on stem cell banking
- Table 4.5and fig 4.12 represents, Mean, Mean score and SD of aspects of antenatal mothers according to attitude regarding stem cell banking.
- The highest Mean score of subject is 23 with SD of 3.57 and 10.85 Mean score percentage of antenatal mothers according to attitude regarding stem cell banking. This indicates that the antenatal mothers have moderately favourable attitude regarding stem cell banking.
- Table-4.6 depicts the frequency and percentage distribution of overall level of attitude of antenatal mothers in pre test and post test. In the pre test majority 75(95.0%) had moderate level of attitude and remaining 3(5.0%) had poor level of attitude. Whereas in the post test all 58 subjects had (96.7%) adequate level of attitude and the rest 2(3.3%) had moderate level of attitude.

Assess the effectiveness of self-instructional module (SIM) among antenatal mothers

- In relation to knowledge of antenatal mothers on general aspects, the obtained mean and SD of pre-test and post-test were 3.58, 6.4 and 0.94, 2.22, and paired ‘t’ value was 11.86
- Improvement of knowledge on indications of stem cell therapy obtained mean and SD of pre-test and post-test were 0.91, 1.6 and 0.49, 1.16 and paired ‘t’ value was 5.99.
- In regard to Knowledge on techniques, obtained mean and SD of pre-test and post-test were 2.06, 6 and 0.73, 2.02 and paired ‘t’ value was17.31
- Improvement of Knowledge on complications, the obtained mean and SD of pre-test and post-test were 2.8, 14 and 1.18, 3.55 and paired ‘t’ value was 29.91.

Association of post test level of knowledge level and attitude score with demographic variables of antenatal mothers:

- The chi-square value of 7.59* was significant at $p<0.05$ level showing that there was an association between type of family and level of knowledge among antenatal mothers.
- The chi-square value of 9.49* was significant at $p<0.05$ level shows that there was an association between educational status of antenatal mothers and level of knowledge among antenatal mothers.
- The chi-square value of 5.39* was significant at $p<0.05$ level shows that there was an association between occupational status and level of knowledge among antenatal mothers.
- The chi-square value of 9.16* that was significant at $p<0.05$ level showing that there was an association between type of medical services and score of attitude among antenatal mothers.

Conclusion

The present study evaluating the effectiveness of self instructional module on stem cell and cord blood banking among antenatal mothers to enhance their knowledge and attitude. The study concluded saying that there was significant improvement in subject score in the post-test after administration of self-instructional module (SIM). Thus, self-instructional module (SIM) was found effective in improving the knowledge level and attitude score of antenatal mothers. In the present study it was also found that there is a significant association between the pre-test score and selected demographic variables.

Nursing Implications

The nurse's role may be essentially unchanged or it may entail different duties by possessing and practicing competencies making nurses better prepared to handle all types of emergencies. The investigator has drawn the following implications in the field of nursing education, nursing service, nursing administration and nursing research.

Nursing Practice

Nurses are key personnel of a health team, who play a major role in the health promotion and maintenance. Nursing is a practicing profession so, the investigator, generally integrates findings into practice.

- Any form of education like storage of stem cell, importance of stem cell banking.
- Nurses, being the key member of the health team have a vital role to play in handling the situation with competencies at the site of caring and managing the antenatal mothers.

Nursing Administration

- Nurse administrators should take responsibility in improving the knowledge level and attitude of antenatal mothers.
- The nurse administrator should assume leadership roles in training and providing education to antenatal mothers.

Nursing Education

Nursing curriculum should incorporates activities like preparation of self teaching materials and also give importance to health education, seminars, symposium and workshop can be organized regarding the aspect of knowledge and attitude of antenatal mothers.

Nursing Research

Nursing research is the means by which nursing profession is growing; more research should be done related to antenatal mothers.

- There is a need for extensive and intensive research in this area so that strategies for improving the skills of antenatal mothers can be developed.
- This study will serve as a valuable reference material for future investigators.

Limitations

- The study setting was limited to 60 samples only. Hence, possibility for wider generalization is limited.

- It was a tedious procedure for the investigator to get the permission for conducting the study.

Recommendations

On the basis of the study that had been conducted, certain suggestions are given for future studies.

- Replication of this study can be done with larger samples in different settings to validate and generalize the findings.
- The same study can be conducted with an experimental research approach having a control group.

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SECTION: A

1 Age in years

a. 21-23 ( )
b. 24-26 ( )
c. Above 26 ( )

2 Religion

a. Christian ( )
b. Hindu ( )
c. Muslim ( )
d. Others ( )

3 Educational status/ reader?

a. Diploma ( )
b.Graduate ( )
c. Post graduate ( )
d. Illiterate ( )

4 Occupational status?

a .Employed/ fulltime ( )
b. Employed/partime ( )
c. Unemployed ( )

5 Type of family

a. Nuclear ( )
b. Joint ( )

6 Family income

a. >25000 ( )
b. <25001 ( )

7 Type of medical services available

a. Private ( )
b. General ( )
c. Government ( )

8 Source of information

a. Health professional ( )
b. Family/friends ( )
c. Mass media ( )

SECTION:B

STRUCTURED KNOWLEDGE QUESTIONNAIRE ON STEM CELL AND CORD BLOOD BANKING

9 Stem cell originates from?

a. Zygote ( )
b. Embryo ( )
c. Foetus ( )

10 Stem cells have high capacity for?

a. Protection ( )
b. Self renewal ( )
c. Degeneration ( )

11 Stem cells are the foundation for every?

a. Cells of the body ( )
b. Organ of the body ( )
c. Muscles ( )

12 Sources of stem cells are?

a. Hair / nail ( )
b. Umbilical cord/Bone marrow ( )
c. Stomach/leg ( )

13 Umbilical cord blood is collected from?

a. Vein ( )
b. Both vein and artery ( )
c. Artery ( )

14 First human umbilical blood transplantation was done in which year?

a. 1987 ( )
b. 1988 ( )
c. 1989 ( )

15 The cells which have the capacity to develop into any type of cell in body?

a. Totipotent ( )
b. Multipotent ( )
c. Puripotent ( )

16 The process of challenging a cell into any type of cell in the body?

a. Multiplication ( )
b. Differentiation ( )
c. Synthesis ( )

17 Stem cells are used to treat conditions such as?

a. Degenerative disease ( )
b.Genetic disorders ( )
c. infectious diseases ( )

18 Example for adult stem cell is

a. Placenta cell ( )
b. Cord blood stem cell ( )
c. Bone marrow cell ( )

19 Stem cells obtained from placenta are called?

a. Embryonic stem cells ( )
b. Amniotic stem cells ( )
c. Somatic stem cells ( )

20 Stem cells donated by some other donor are referred as?

a. autologous stem cell therapy ( )
b. allogenic stem cell therapy ( )
c. analogous stem cell therapy ( )

21 Stem cell collection is a procedure which is?

a. Invasive ( )
b. Non invasive
c. Partial invasive

22 How is the blood drawn out from the umbilical cord?

a. Through suction catheter ( )
b. Through needle ( )
c. Through pipe ( )

23 Stem cell proves to treat how many diseases?

a. 10 ( )
b. 45 ( )
c. 80 plus ( )

24 Cord blood is collected soon after _ minutes after delivery?

a. 10 minutes ( )
b. 40 minutes ( )
c. 60 minutes ( )

25 Cord blood is collected from the umbilical cord?

a. Connected to the baby ( )
b. Connected to the placenta ( )
c. Not from the umbilical cord ( )

26 How much blood is collected from the umbilical cord for stem cell banking?

a. 30ml ( )
b. 60ml ( )
c. 10 ml ( )

27 The stem cell treatment cycle need_ weeks to start its function?

a. 1-2weeks ( )
b. 2-6weeks ( )
c. 5-6weeks ( )

28 Before a cord blood collection process nurse takes a signature of the patients in order to receive?

a. Complaint ( )
b. Judgment ( )
c. consent ( )

29 Which are the two types of cord blood banks available?

a. Private and public ( )
b. National and international ( )
c. State and district ( )

30 How are the stem cells preserved?

a. Hydro preservation ( )
b. Cryopreservation ( )
c. Solar preservation ( )

31 How long cord blood can be stored?

a. Indefinitely ( )
b. 10 years ( )
c. 20 years ( )

32 The stem cell bag after the collection has to reach the storage centre within?
a. 20 hours ( )
b. 44 hours ( )
c. 48 hours ( )

33 The cord blood is preserved at a temperature of?
a. -190c ( )
b. -100c ( )
c. -205c ( )

34 The solvent used for cryopreservation of cord blood?
a. Carbon disulfide ( )
b. Dimethyl sulfoxide ( )
c. Tetrahydrofuran ( )

35 India's first public cord blood bank is?
a. Jeevan blood bank research centre ( )
b. Subha research centre ( )
c. Divya research centre ( )

36 Cord blood saves life of?
a. Only donors ( )
b. Only donors mothers ( )
c. Whole family ( )

37 Whom would you address if you want to store your cord blood?
a. Personal obstetrician ( )
b.Teacher ( )
c. Friends ( )

38 If I was offered an opportunity to store my babies cord blood, I would accept
a. Agree ( )
b. Disagree ( )
c. Neutral ( )

S. NO	STATEMENTS	FA	MA	UA
1	**General:** It is necessary to know about stem cell banking			
2	Stem cell collection process is a non invasive method which is done soon after the delivery (10-15 minutes).			
3	The blood is collected from umbilical cords arterial part. Stem cell			
4	**Stem cell therapy** Stem cell therapy is the use of stem cells to treat or prevent a disease or condition.			
5	Bone marrow transplant is the most widely used stem cell therapy			
6	60 ml of blood has to be collected from a single donor.			
7	**Indications** A family history of cancer, blood disorders and other diseases are treated with stem cell therapy			
8	It is used to treat immunodeficiency diseases.			

9	Metabolic disease can be treated with stem cell therapy			
10	Type of treatment could be used to replace neurons damaged by spinal cord injury, stroke, Alzheimer's disease			
11	**Need for stem cell banking** Basically cord blood cells are said to treat around 80 plus diseases.			
12	It will take soon time to recover from a stem cell transplant.			
13	Cord blood is rich source of life saving cells			
14	It does not harm mother or child			
15	Cord blood is readily available when banked and stored			
16	**Complications:** Risk of high contamination			
17	High risk to be mismatch genetic typing			
18	Very costly in private banks			
19	Invasive collection procedure			
20	High chance of transformation into cancer cells			
21	Baby can be injured through this procedure			

22	If mothers do not notify the bank before delivery they will not take the cord blood			
23	If the donor is found to be diseased then the stem cells of that donor will be discarded			

FA:-favourable attitude, MA:-moderate attitude, UA:-unfavourable attitude.